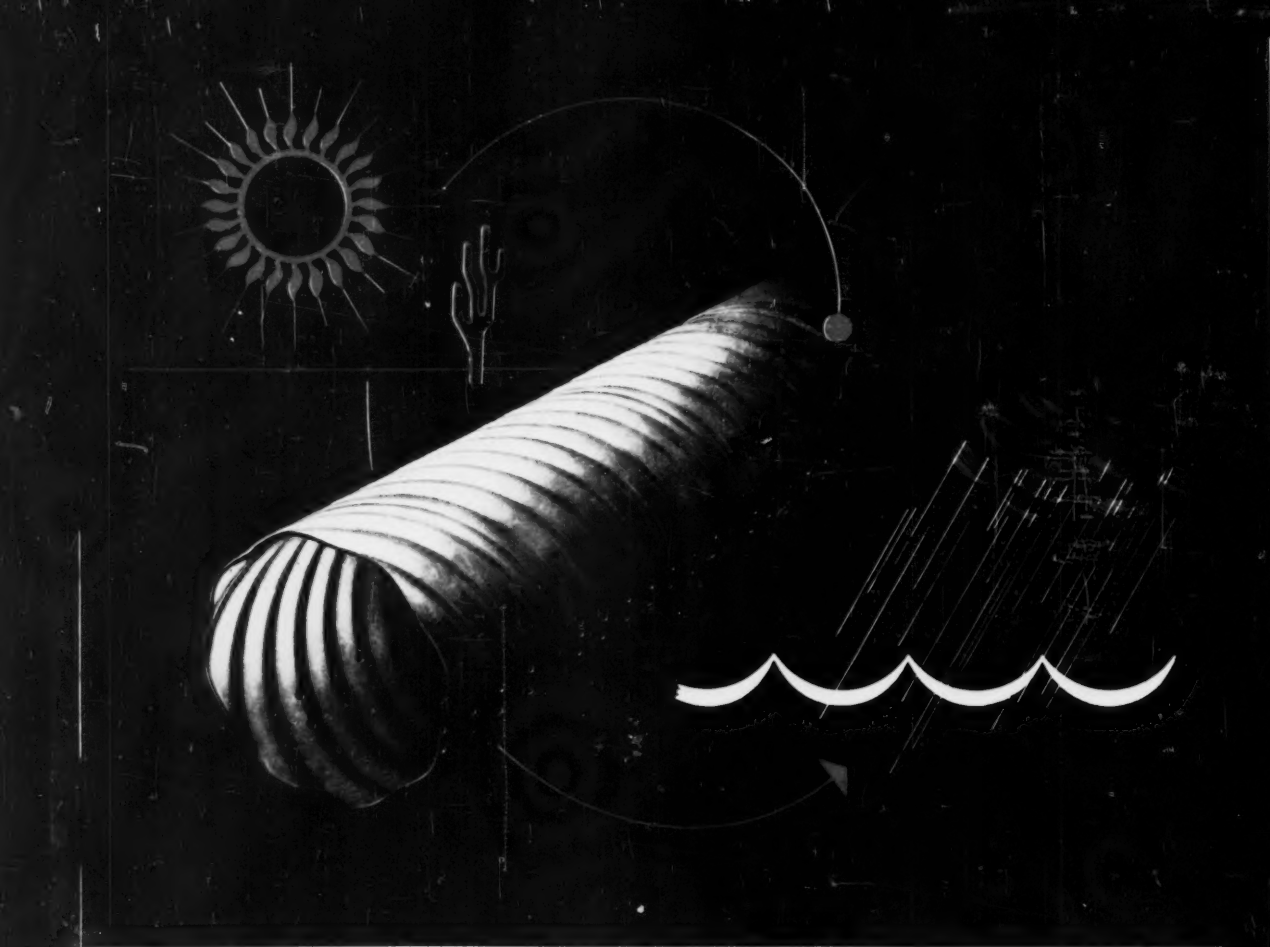
ENGINEERING NEWS-RECORD

A McGRAW HILL PUBLICATION



They stopped a flood on dry land

Flooded subgrades often caused heavy maintenance expense on highways, airports and railways, even when the surface was dry as a bone.

To remove this excess water permanently and economically Armco engineers developed HEL-COR Perforated Pipe.

Made on automatic machines, this pipe meets all the needs of a first class subdrainage system. It is low in cost, easy to handle, and durable. It has ample corrugated metal strength to withstand shifting soils, frost action or the impact and vibration of heavy loads. Scientifically placed holes collect unwanted water, which is drained off along the pipe invert. Subgrades become dry and stable; maintenance costs go down.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are Spiral Welded Pipe, FLEX-BEAM Guardrail, STEELOX Buildings and MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance that you will receive all the benefits of long experience, extensive research facilities and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES
SUBSIDIARY OF ARMCO STEEL CORPORATION

Berkeley, California ★ Middletown, Ohio ★ South Bend, Indiana ★ Baltimore, Maryland
Denver, Colo. ★ Des Moines, Iowa ★ Atlanta, Ga. ★ Topeka, Kansas ★ Houston, Texas
Minneapolis, Minnesota ★ Portland, Oregon ★ Washington, D. C. ★ Guelph, Ontario

B.F.Goodrich

The tire that should lose but doesn't

WHEN water, sharp rocks and rubber start fighting—it's usually the tire that has the handicap. The water acts as a lubricant, causing the tires to spin — while the sharp rocks cut at the slipping rubber.

But the BFG Rock tires shown above are an example of how B. F. Goodrich builds tires to lick tough problems.

To resist cutting, these tires have a special, tough tread—compounded for rock service. To resist slippage, the heavy cleats on the shoulders are non-directional . . . they dig in for a non-slip bite, in forward or reverse. To give real shock protection to the cord body, these and other B. F. Goodrich off-the-road tires have a patented *nylon shock shield* (double in larger sizes).

Found only in BFG tires, the shock shield is made of two nylon cord breakers. This is vulcanized between the tread and cord body to protect the life of the tire against the shocks of hard service.

The Wallowa County Road Department office in Enterprise, Oregon, operators of the equipment shown above, have this to report: "The B. F. Goodrich tires have given longer and better all-around service than any other brand we have used." In other words, the tire that's hard to cut is the tire that cuts costs.

Whatever job your off-the-road equipment must perform, there's a special BFG tread built to help you do it better. In addition, you get the exclusive protection of the nylon shock shield at no extra cost.

So see your B. F. Goodrich dealer. And specify BFG tires for your new equipment. Enjoy the longer life and lower operating costs offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

dewater
the
Complete
way
THE COMPLETE WELLPOINT IS SELF JETTING
"Complete's" patented wellpoints give you compactness, simplicity, lightness and Strength. Keep wet work bone dry when other methods fail. Write or wire for estimates, and engineering consultation.
Don't Gamble with costly water hazards . . . get "COMPLETE" and get results!
Write today for "Complete" catalog Dept. ER
COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
LONG ISLAND CITY, N. Y.
Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA
PLETE
WELLPOINT
SYSTEMS
FOR SALE OR RENT

ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 JANUARY 4, 1951 No. 1

WALDO G. BOWMAN
Editor

FEATURES OF THIS ISSUE

Continuous Concreting Preserves Tunnel's Rock Bore 32
Dam Higher than Hoover Dam Proposed for Kosi River in India 34
90-Ton Pedestal Piles for Iron-Titanium Plant . . . . . T. E. Smith 35
Sulphite Liquor Used as Fuel 37
What Happened to the New Towns in Britain? . . . . . F. R. Brewster 39
Cathodic Protection of a Dam . . . . . J. P. Collopy, W. D. Freeman 43
Precision Track Tests Guided Missiles 44
Huge Arched Roofs Built of Precast Units 46
Perspective—Letter from Indianapolis 112

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Reader Comment 48
Developments Abroad 52
Municipal Affairs 58
Men and Jobs 62
Meetings 66
Obituaries 69
Unit Prices 73
Construction Reports 75
New Products 101

Number of copies of this issue printed 45,391

Managing Editor—Eugene E. Halmos, Jr.

Associate Editors—*New York*, V. T. Boughton (senior associate), J. C. Bumstead, R. H. Dodds, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, N. A. Bowers, L. L. Wise; *Washington*, V. B. Smith.

Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor, D. E. Reilly.

Staff Assistants—Mary Kiernan, *Research*; Ethel Lyon, *Makeup*; E. E. Thorp, *Printing*; Louise Barker, Ruth McCarthy, Madalene Smith, *Editorial*.

Business News—Elsie Eaves, *Manager*; E. M. Huber, Jane Lucia, J. A. Mahoney, M. W. Roessler, M. Wetzel.

Contributing Editor—Edward J. Cleary.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

January 4, 1951 ENGINEERING NEWS-RECORD Vol 146—No. 1

Member ABC and ABP

Published weekly by McGraw Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 18, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 N. Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 18, N. Y. Allow ten days for change of address. Please indicate position and company connection on all subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Pan American countries, $10.00 a year; $16.00 for two years; $20.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1930, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

Copyright 1950 by McGraw Hill Publishing Co., Inc.—All Rights Reserved.

Buy for the TOUGH JOBS!

. . . and the easy jobs take care of themselves!

Another Northwest in Rock! — and did you ever notice how many Northwests you see in rock?

It has everything a real Rock Shovel needs and when you have a real Rock Shovel you never have to worry about output in any kind of digging.

The Dual Independent Crowd — independent plus automatic — utilizes force other shovels waste. Cast steel machinery bases and machinery side-frames keep shafts in alignment and reduce wear on bearings under the strain of rock digging. The Cushion Clutch eliminates the effect of shock overload on parts under power. The "Feather-Touch" Clutch Control increases output by assuring easier operation and the *feel of the load* when handling the "big ones". These are just a few of the advantages you won't find on other shovels — just a few of the features that will make more money for you in the heart of your job. Plan ahead to have a Northwest for your *Key Spots*. Let us tell you how.

NORTHWEST ENGINEERING CO.
1502 Field Bldg., 135 South LaSalle Street
Chicago 3, Illinois

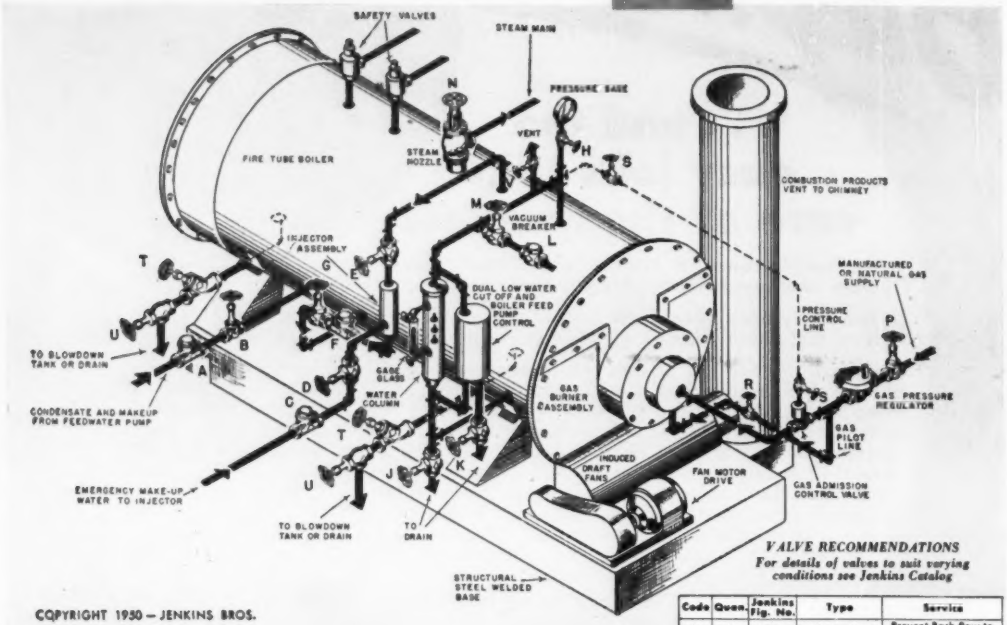
only the best for the heart of the job

MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL

PROFIT

NORTHWEST

SHOVELS and WALK-EQUIPPED SHOVELS • CRANES • DRAGLINES • PILEDRIVERS



COPYRIGHT 1950 — JENKINS BROS.

VALVE RECOMMENDATIONS
For details of valves to suit varying conditions see Jenkins Catalog

Code	Quan.	Jenkins Fig. No.	Type	Service
A	1	762	Br. Swing Check	Prevent Back flow to Boiler Feed Pump
B	1	49	Br. Gate	Feedwater Shutoff
C	1	762	Br. Swing Check	Prevent Back flow to Emergency Make-up
D	1	950	Br. Globe	Emergency Make-up Manual Control
E	1	956	Br. Globe	Control Steam Flow to Injector
F	1	762	Br. Swing Check	Injector Mixture to Boiler
G	1	950	Br. Globe	Emergency Make-up Admission to Boiler
H	1	741-G	Br. Needle	Pressure Gage Control
J	1	956	Br. Globe	Water Column Blowdown
K	1	956	Br. Globe	Blowdown Control
L	1	756	Br. Lift Check	Vacuum Breaker Air Admission
M	1	950	Br. Globe	Vacuum Breaker Shutoff
N	1	925	I.B.B.M. Angle	Steam Nozzle discharge
N	1	293	I.B.B.M. Angle S & C	Where 2 or more boilers feed one system
P	1	370	Br. Gate	Gas Shutoff
R	1	741-G	Br. Needle	Gas Pilot Shutoff
S	2	741-G	Br. Needle	Pressure Control Line Shutoff
T	2	124	Br. Blowoff	Blowdown assembly
T	2	297	I.B.B.M. Blowoff	Blowdown assembly
U	2	952	Br. Angle	Blowdown assembly
U	2	615	I.B.B.M. Angle	Blowdown assembly
V	1	741-G	Br. Needle	Boiler Vent Valve

How to plan PACKAGE BOILER CONNECTIONS

Package Boiler Units for power generation, heating and industrial process work, are in increasing demand. Usual requirements vary from 20 to 500 boiler horsepower and for pressures up to 900 p.s.i. Shown here is a gas fired, 100 p.s.i., fire tube type, with all piping connections conforming to A.S.M.E. Boiler Code.

Two means of boiler feed are provided, the normal feed from condensate return and the emergency feed by means of a manually operated steam injector. A dual low water cut-off and boiler feed control is provided with float and electrode type cut-offs and boiler feed control for maintaining constant water level incorporated in a single unit.

The failure of feedwater from the normal source would cause this dial unit to cut off the fuel supply and sound an audible alarm. If boiler operation is required immediately, cold water make up can be introduced through the manually operated steam injector.

Consultation with accredited piping engineers and contractors is recommended when planning major piping installations.

A CHOICE OF OVER 500 VALVES

To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering experience, select all the valves you need from Jenkins Catalog. *It's your best assurance of lowest cost in the long run.*

Jenkins Bros., 100 Park Ave., New York 17; Jenkins Bros. Ltd., Montreal.

Jenkins Bros., 100 Park Ave., New York 17

Reserve copy of new book of piping layouts — Nos. 26 to 50 — now in preparation.

Name _____

Company _____

Address _____

JENKINS
LOOK FOR THE DIAMOND MARK
VALVES
SINCE 1864
TRADE JENKINS MARK
Jenkins Bros

This Is Really One For The Book!

FEW PEOPLE would expect a blasting cap plant to be one of the safest places to work. Yet Atlas workers, on December 6, 1950, completed five years of making Manasite blasting caps and electric blasting caps without a single lost-time injury! During this period, they produced well over 250,000,000 of these detonators.

The last injury serious enough to send an employe home from work, five years ago, was a wrenched back. The one before that, a bruised ankle. In fact, no lost-time injury has been caused by an explosion in the plant since Atlas converted to Manasite blasting caps and omitted fulminate of mercury as an ingredient in these products some twelve years ago.

Little did anyone realize, then, the new degree of safety which would be made possible in the plant, as well as in the quarries, mines and construction jobs where blasting caps are used. Thanks to pioneering by Atlas research, engineers and experienced production employes, the safety of making and using blasting caps has made a great forward stride. Manasite detonators give greater effectiveness to the safety precautions which must always be followed in handling explosives.

Manasite is typical of Atlas contributions to safer, more effective, and more economical blasting. That's why you can expect to get the *right* answers to blasting problems from Atlas—originator of Manasite detonators and the famous ROCKMASTER "16" Blasting System.

Rockmaster and Manasite: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

MAINTENANCE COSTS GO DOWN

...when TEXACO MARFAK goes in

TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

TEXACO

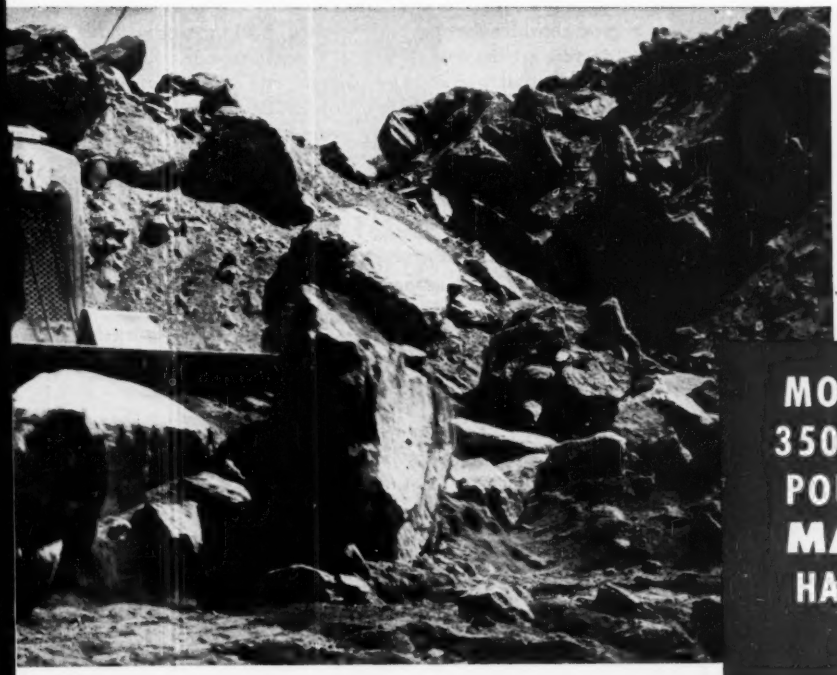
TEXACO

Texaco Marfak stays in bearings in spite of the roughest service your bulldozers, shovels, trucks and other equipment may get. *Texaco Marfak* is both adhesive and cohesive, won't pound or squeeze out, resists washout. You get longer lasting protection against wear and rust . . . positive assurance of longer parts life, lower maintenance costs.

In wheel bearings, *Texaco Marfak Heavy Duty* gives similar long-lasting protection against wear and rust . . . requires no seasonal change. It seals out dirt and moisture and seals itself in — assuring longer bearing life, as well as safer braking.

For further savings, lubricate engines — heavy-duty gasoline or Diesel—with *Texaco Ursa Oil X***. This fully detergent-dispersive oil cleans as it lubricates . . . keeps rings free, assuring better compression and combustion . . . keeps fuel consumption and maintenance costs down.

Let a Texaco Lubrication Engineer work with you to simplify your lubrication procedures and reduce your costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



MORE THAN 350 MILLION POUNDS OF MARFAK HAVE BEEN SOLD!

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Here's why

CARSET JACKBITS

have changed the entire concept of today's rock drilling costs

Since the advent of the Carset Jackbit, drilling costs can no longer be reckoned *only* in terms of bit cost per foot of hole. For this is only *one of many* items where Carset Jackbits have made possible tremendous over-all savings.

Check the fourteen economies listed below. Note how any one of them by itself makes a significant reduction in the cost of drilling rock. But only when you consider the cumulative effect of all these savings do you get the true picture of Carset economy. It is a picture that has already changed the entire concept of drilling costs — in mines, quarries, tunnels and construction jobs the country over.

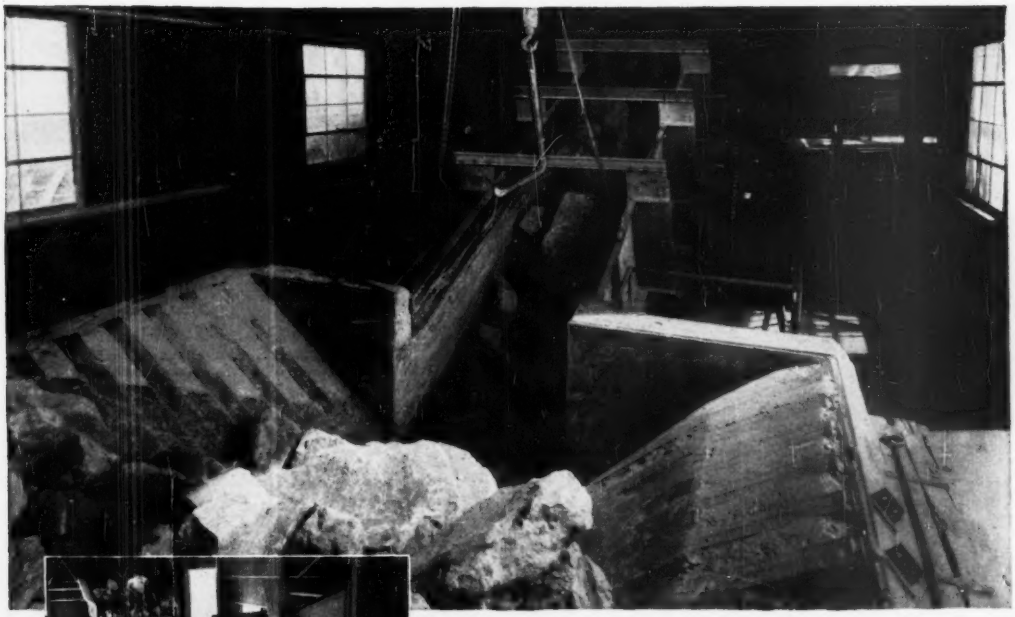
✓ ***CHECK*** **THESE FOURTEEN SERVICE-PROVED SAVINGS! EACH ONE IS AN IMPORTANT FACTOR IN CUTTING COSTS PER TON OR YARD OF ROCK BROKEN**

1. Carset Jackbits wear longer
2. Drill faster — 50% or more
3. Boost tonnage 20% or better
4. Consume less drill steel
5. Save up to 30% on dynamite
6. Practically eliminate bit changes
7. Use longer steels
8. Eliminate tapered holes
9. Permit use of lighter drills
10. Reduce air consumption at least 40%
11. Require less shop equipment
12. Reduce maintenance costs 30% or more
13. Drill the hardest rock
14. Finish more rounds per month

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N.Y. 588-15

ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO-BLOWERS
CONDENSERS • CENTRIFUGAL PUMPS • DIESEL AND GAS ENGINES



CAN YOU AFFORD A FEEDER WITHOUT THESE 6 FEATURES?

1. **SPROCKET TEETH** . . . replaceable without removing sprockets.
2. **SELF-CLEANING LINKS** . . . they won't jump.
3. **LINKS CAST INTEGRAL WITH PANS** . . . no bolts to lose.
4. **ALL WEARING PARTS** . . . pans, links, sprockets, rollers . . . of cast super-manganese steel.
5. **PANS INTERLOCKED** at four points . . . can't sag.
6. **MOUNTED** on heavy structural steel bed . . . braced and reinforced.

Lone Star Cement Installs Another Pioneer-Oro Feeder

What better recommendation for a feeder than repeat orders? Last year Lone Star Cement Corporation, one of the world's largest cement producers, installed another PIONEER-ORO Feeder. This huge feeder is 45 feet long with a clear width of 5 feet.

Money can't buy a stronger, tougher feeder! All wearing parts . . . pans, links, sprockets and rollers . . . are of cast manganese steel. The patented pans in this Lone Star installation are $\frac{7}{8}$" thick, each weighing 800 pounds. Four supporting points on each pan prevent sagging, even without rollers. PIONEER-ORO Feeders are made in widths up to six feet, and lengths to meet your requirements.

In addition to a broad line of PIONEER-ORO Feeders, Pioneer builds Traveling Grizzly, Forged Steel Apron and Heavy Duty Mechanical Feeders—in many sizes. Mail the coupon below for further feeder information.

BUY BOTH!

Higher Output, Lower Upkeep!

Pioneer

Continuflo **EQUIPMENT**

MAIL COUPON TODAY!

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota

● Please send information on the equipment checked.

- ☐ PIONEER-ORO FEEDERS
- ☐ APRON FEEDERS
- ☐ TRAVELING GRIZZLY FEEDERS
- ☐ CONTINUFLO CONVEYORS
- ☐ JAW CRUSHERS
- ☐ ROLL CRUSHERS
- ☐ VIBRATING SCREENS
- ☐ WASHING PLANTS

Name_____

Company_____

Address_____

City_____ Zone____ State_____

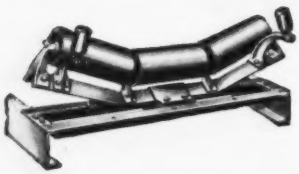
JEFFREY

BELT IDLERS

Thousands of Jeffrey Idlers are being used daily in Belt Conveyor service all over the world. We can furnish them by the rod, or mile, just as the job requires. We know how to provide for reliability under tough conditions, handling of peak loads, low investment, high salvage, etc. Let us talk things over—constructively.

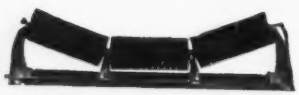
Roller or Ball Bearing Troughing and Return Idlers for belts from 14" to 60" wide.

Roller or Ball Bearing Carrying and Return Idlers for Flat Belts from 14" to 60".



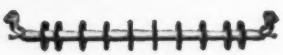
Roller or Ball Bearing Self-Aligning Troughing Idlers.

Roller or Ball Bearing Self-Aligning flat belt return idlers.



Impact Absorption Idlers for protecting belts at loading points.
(Pat'd)

Spool type return idlers for use where sticky or dirty materials are handled.
(Pat'd)



Self-aligning spool type return idlers.

PRODUCTS:

Belt Trippers
Bin Valves
Bucket Elevators
Car Pullers
Chains
Conveyors
Coolers
Crushers
Dryers
Feeders
Magnetic Separators
Idlers (Belt)
Packers
Pulverizers
Screens
Shredders
Stackers
Transmission Machinery
Equipment for treating Sewage, Water, Industrial Wastes

DISTRICT OFFICES:

Baltimore 2
Beckley, W. Va.
Birmingham 3
Boston 16
Buffalo 2
Chicago 1
Cincinnati 2
Cleveland 15
Denver 2
Detroit 13
Harlan, Ky.
Houston 2
Jacksonville 2
Milwaukee 2
New York 7
Philadelphia 3
Pittsburgh 22
St. Louis 1
Salt Lake City 1
Scranton 3

Catalog No. 785 Tells All

THE JEFFREY
MANUFACTURING COMPANY

923 North Fourth St., Columbus 16, Ohio **Est. 1877**

Jeffrey Mfg. Co. Ltd., Montreal, Canada
Jeffrey-Galion (Pty.) Ltd., Johannesburg, S.A.
The Ohio Malleable Iron Co., Columbus, Ohio
British Jeffrey-Diamond Ltd., Wakefield, England
The Galion Iron Works & Mfg. Co., Galion, Ohio
The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

NEWS BRIEFS

Likes old-fashioned bridge—Massachusetts Public Works Commissioner William F. Callahan and officials of the town of Sheffield differ over the proposed construction of an old-fashion covered wooden bridge to span the Housatonic River. Callahan wants it because there are not many of that type left in New England—sentimental reason. The estimated cost would be $150,000. The town officials, however, are holding out for a new concrete and steel span to cost $200,000.

Timber!—A falling tree which smashed a passing automobile is the basis for a $52,587 claim filed against Seattle, Wash. The tree, a poplar, was shallowly rooted on a parking strip owned by the city, declared Prof. J. Hoover Mackin of the University of Washington geology department, who, with Mrs. Mackin, was injured in the accident. The city engineering department was aware of the "defective" nature of the tree and should have had it removed, the Mackins assert.

Turnpike radio—W. B. Getchell, Jr., executive director of the Maine Turnpike Authority, has applied to the Federal Communications Commission for permission to install an 11-station short-wave radio system along the 45-mile highway soon. There would be stations at the terminals at Portland and Kittery, at the Kennebunk garage, and at the headquarters building. Also there would be 7 mobile units.

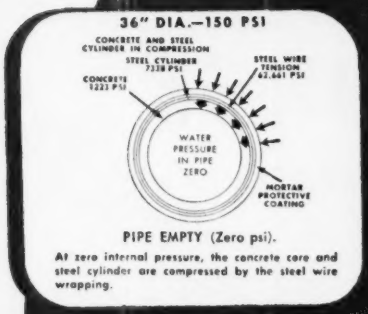
Cinder shortage—In Pennsylvania there is a shortage of cinders for road work. According to W. J. Buchy, maintenance office engineer, there are two reasons for it. One is that cinders are being converted into building blocks and the other is that railroad locomotives aren't burning as much coal as formerly.

Air-conditioning the Empire State—The Empire State Building, New York City, the highest in the world, is to be air-conditioned. After years of study and experiment, the York Corporation has designed and built the plant and Starrett Brothers & Eken, Inc., have been given a $1,500,000 contract for installation. Plans call for a chilled water-cooling plant covering 4000 sq ft in the sub-basement. A pipe system extending to the 86th floor will distribute the chilled water to the tenants. New methods of installation and specially-designed equipment were necessary to withstand

STEEL CYLINDER
RUBBER GASKET
CONCRETE CORE
CROSS SECTION OF COMPLETED FIELD JOINT
Lock joint concrete cylinder pipe (interlocked) with rubber gasket joint.

ADVANCED DESIGN

of Prestressed Concrete Cylinder Pipe is gaining increasingly wide acceptance in the West


36" DIA.—150 PSI
CONCRETE AND STEEL CYLINDER IN COMPRESSION
STEEL CYLINDER 7338 PSI
STEEL WIRE TENSION 62,661 PSI
CONCRETE 1221 PSI
WATER PRESSURE IN PIPE ZERO
MORTAR PROTECTIVE COATING

PIPE EMPTY (Zero psi).

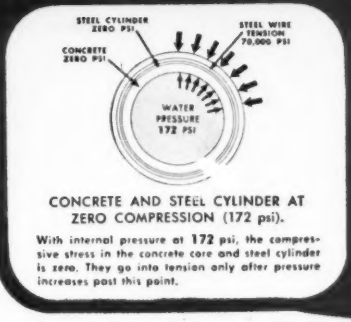
At zero internal pressure, the concrete core and steel cylinder are compressed by the steel wire wrapping.

CONCRETE AND STEEL CYLINDER STILL IN COMPRESSION
STEEL CYLINDER 939 PSI
STEEL WIRE TENSION 69,060 PSI
CONCRETE 137 PSI
WATER PRESSURE 150 PSI

WORKING PRESSURE (150 psi).

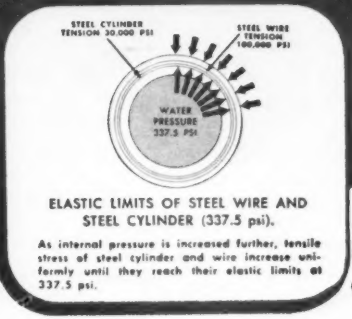
At working pressure of 150 psi, the compression in both the steel cylinder and concrete core is partially relieved by the internal pressure of the water, but cylinder and lining still remain in compression.

Complete information upon request.



CONCRETE AND STEEL CYLINDER AT ZERO COMPRESSION (172 psi).

With internal pressure at 172 psi, the compressive stress in the concrete core and steel cylinder is zero. They go into tension only after pressure increases past this point.



ELASTIC LIMITS OF STEEL WIRE AND STEEL CYLINDER (337.5 psi).

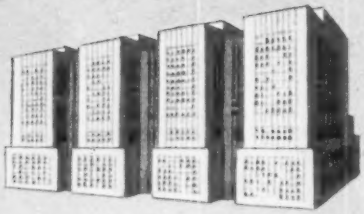
As internal pressure is increased further, tensile stress of steel cylinder and wire increase uniformly until they reach their elastic limits at 337.5 psi.

This design of pipe is covered by A.W.W.A. Tentative Standard Specification (7B. 2-T) for Reinforced Concrete Water Pipe of the Steel Cylinder Type—Prestressed. Also covered by Extinguisher reports 1720 and 1721 of the Underwriters' Laboratories, Inc.

American PIPE AND CONSTRUCTION CO.

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines
P. O. Box 3428, Terminal Annex, Los Angeles 54, California
Main Offices and Plant—4635 Firestone Blvd., South Gate, Calif.
District Sales Offices and Plants—Oakland • San Diego • Portland, Ore.

NOW...



EVEN

GREATER SAVINGS

with Reinforced Concrete

Standard Specifications for
MINIMUM REQUIREMENTS FOR THE DEFORMATIONS OF DEFORMED STEEL BARS FOR CONCRETE REINFORCEMENT
A.S.T.M. Designation: A 305-50 T

by Specifying Reinforcing Bars that meet ASTM A305

Your steel company is now offering you reinforcing bars that meet ASTM Specification A305-50T. Because of their higher deformations and closer spacing, these bars provide a greater bond between steel and concrete—eliminating the need for hooks under practically every condition. Equally important, they reduce the size of tension cracks to provide a better appearing structure requiring less maintenance.

Some building codes already permit greater bonding stresses and the elimination of hook anchorage when ASTM A305 bars are used. Similar changes in the ACI Building Code are awaiting final approval.

For greater economies in design and for sounder, more permanent structures, specify A305 bars by their new number designations. A new bar chart, covering these designations, will be sent you upon request. Write . . .

CONCRETE REINFORCING STEEL INSTITUTE • 38 S. Dearborn St., Chicago 3

hydrostatic pressure in excess of 600 psi resulting from columns of water almost ¼ of a mile high.

River stay away from my door!—It is estimated that the Schuylkill River reclamation project saved the city of Reading, Pa., about $2,000,000 in a recent storm. Secretary M. F. Daemel of the state department of Forests and Waters said: "Relief from damage by high waters was promised Reading more than two years ago, and this has been accomplished. High waters running past Reading over the Nov. 23 week-end were comparable in volume to the flood records of 1942 when the city suffered heavily from water damage. The project, now nearing completion, lowered the flood crest elevation as much as 8 ft through Reading.

New 4-lane highway—One of the largest construction projects to be undertaken in Wyoming in 1951 will be the conversion of the Lincoln Highway into a 4-lane superhighway for 6½ miles east of Cheyenne.

THE COVER

Henry J. Kaiser likes to boast that his sprawling empire of business has been built and kept running smoothly by an integrated team of workers.

One of the key members of that team here is looking over plans for a $165 million steelmaking capacity increase (see also p. 23) with his boss. He's small, slow-speaking, competent George Havas, vice-president, general manager and chief engineer of Kaiser Engineers—a division of Kaiser Industries, Inc.

A native of Budapest, Hungary, Mr. Havas completed his engineering education at Stuttgart, Germany, went from there to become resident engineer with a Cuban sugar company. There, in 1928, he met Kaiser (who was building Cuban highways) and joined the Kaiser staff. Since that time, Havas' career has paralled the growth of the company: From 1932 to 1934 he was in charge of construction programs, schedules, estimates and cost analyses for Six Companies, Inc., on Hoover Dam; worked on Bonneville Dam (as chief engineer for Columbia Construction Co.), and for development of Kaiser enterprises since.

Today, he heads a 200-man staff designing and planning expansion of facilities for the parent company and its numerous subsidiaries, and for such other diverse customers as the city of Vallejo, Calif. (a sewage treatment plant) and the U. S. Navy.

He complains that at the moment one of his three hobbies—work—leaves him little time for two others: Photography and his family (two girls and a boy).

DRIVING 75 FOOT Tubular Piles

THESE 75-foot tapered, fluted, tubular piles with 20-foot extensions were driven to a minimum bearing of 40 tons each by a McKiernan-Terry 10-B-3 Double-Acting Pile Hammer in constructing the new highway bridge at Spring Lake, Michigan. •To insure accurate driving and to protect these long, costly piles from damage during driving, the contractors, Luedtke Engineering Company, chose McKiernan-Terry equipment. For 50 years, whether for driving timber, sheet steel, concrete or pipe piles, contractors have grown to depend upon powerful, safe-to-operate McKiernan-Terry Pile Hammers. •17 sizes of hammers and extractors are available in the complete McKiernan-Terry line. Write for bulletin giving full data.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION, MANUFACTURING ENGINEERS
13 PARK ROW, NEW YORK 7, N. Y.
Plants: Harrison, N. J., Dover, N. J.

MK-288

GUTS

When two-legged people have guts, they finish the fight and do the job.

Real guts—that's what the world admires—man or machine.

You can't define what makes guts in a man, but you can "analyze" the fighting, working, dogged innards of the Champ. So let's put the X-ray on the TD-24:

Drawbar Horsepower: 148 working horsepower delivered at the drawbar in official tests.

Synchromesh Transmission: you "shift on-the-go," with eight speeds forward, eight reverse for faster time cycles with more pay dirt per cycle.

Instant Speed Change: up or down one speed without declutching.

Planet Power Steering: all turns are easier . . . pivot turns, feathered turns, turns with power on both tracks.

Reserve Torque: gives the Champ the lugging ability to fight through temporary overloads.

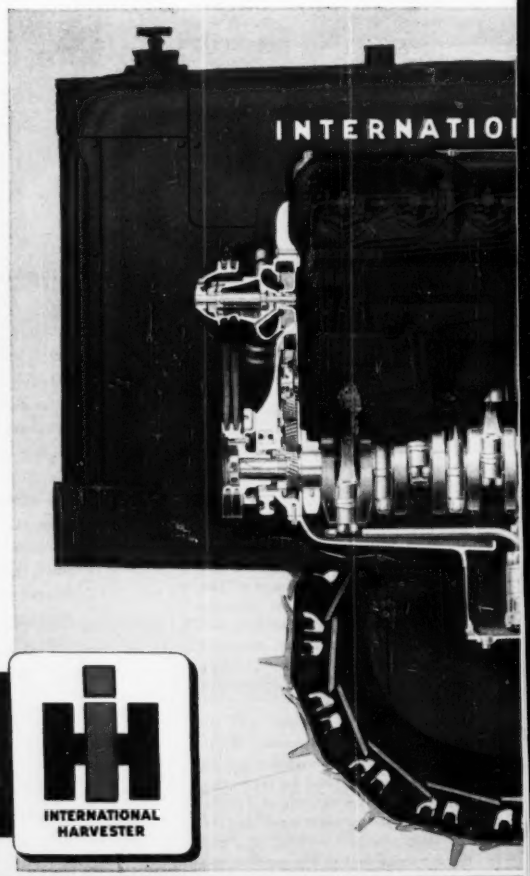
Easy Steering: finger-tip hydraulic controls.

All-Weather Starting: push-button, gasoline-conversion starting—an International exclusive—gets you on the job fast.

More Work: the TD-24 is doing more work—with more speed and more lugging ability—than any other crawler tractor on the market.

Look it over. Then ask your International Industrial Distributor to show you what it can do for you. You'll be a TD-24 man from then on in.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS



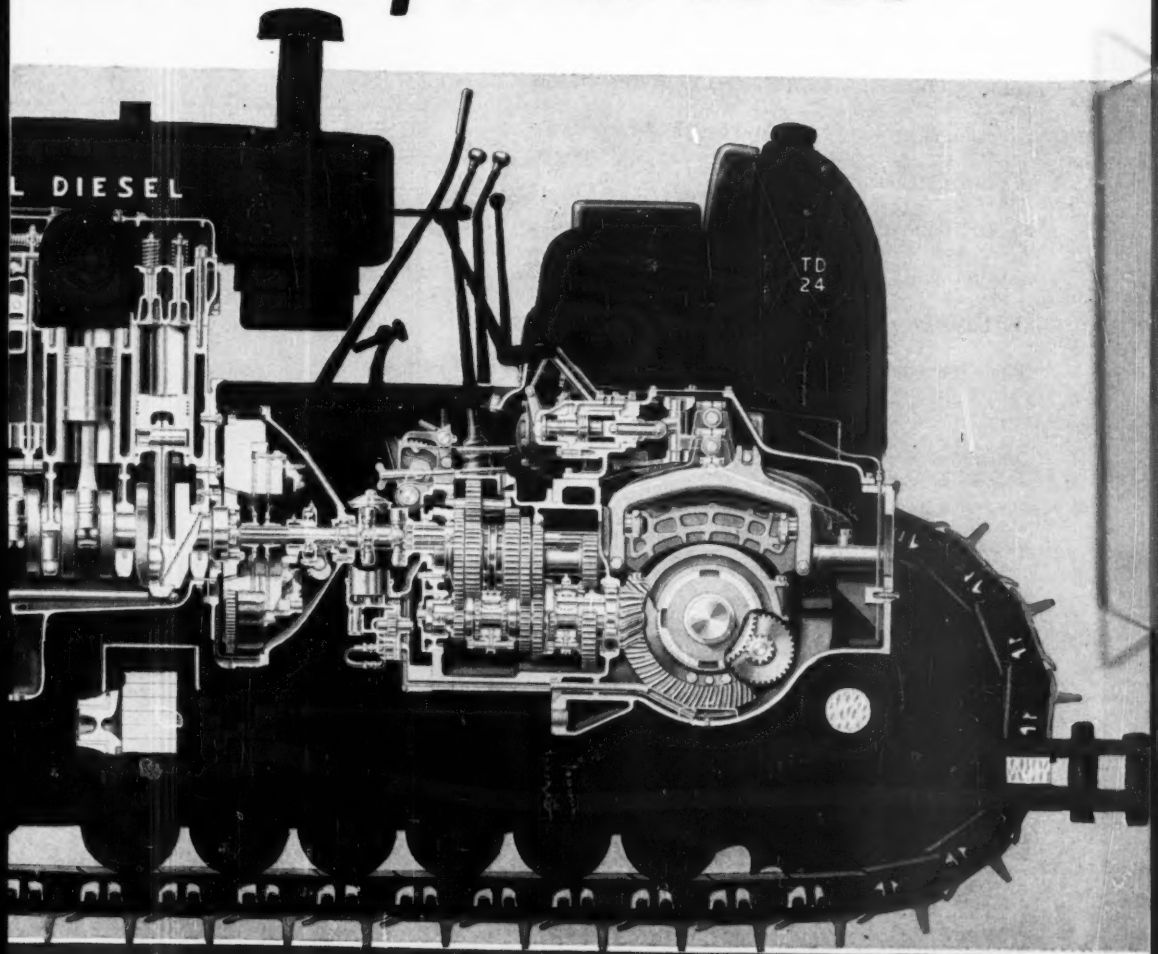
POWER THAT PAYS

INTERNATIONAL

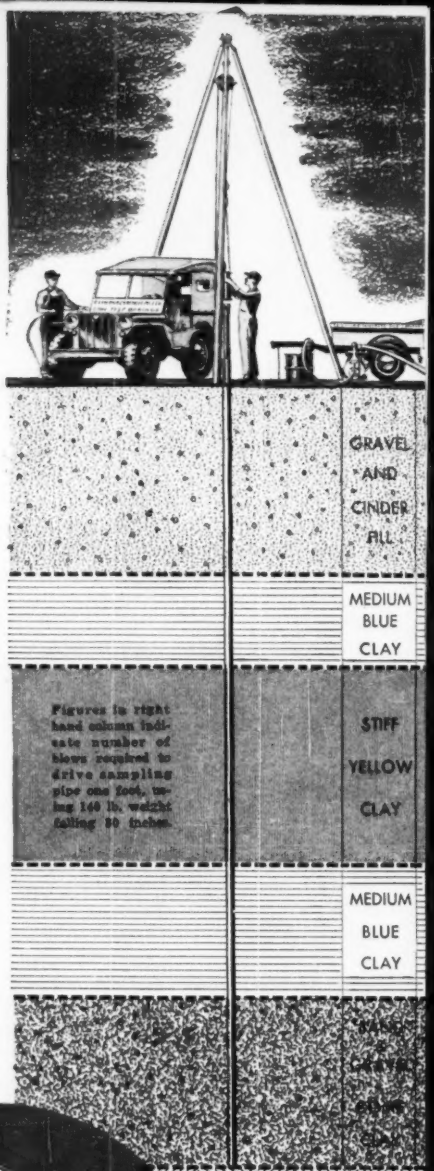
INTERNATIONAL HARVESTER

OF A CHAMP

inside story of the TD 24



GOW SOIL BORINGS BY Raymond


GRAVEL AND CINDER FILL
MEDIUM BLUE CLAY
Figures in right hand column indicate number of blows required to drive sampling pipe one foot, using 140 lb. weight falling 30 inches.
STIFF YELLOW CLAY
MEDIUM BLUE CLAY
REFUSAL – LEDGE ROCK OR BOULDER

Carefully made soil investigations are of great value to Owners, Architects and Engineers in the selection of building sites and the determination of proper structural foundations.

Specify dependable Gow borings by Raymond and you will secure information that will supply the basis for sound engineering decisions.

Their low cost will surprise you.

• • •

THE SCOPE OF RAYMOND'S ACTIVITIES includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement mortar lining of oil and water pipe lines 4" to 144" in diameter by the Centriline Corporation, a Raymond subsidiary.

GOW DIVISION

Raymond

CONCRETE PILE CO.

140 Cedar Street, New York 6, N. Y.

BRANCH OFFICES:

Boston • Syracuse • Philadelphia • Baltimore
Washington • Pittsburgh • Atlanta • Miami
Houston • Kansas City • St. Louis • Cleveland
Chicago • Detroit • Salt Lake City • Portland
San Francisco • Oakland • Los Angeles
and principal cities in Latin America

THE CONSTRUCTION WEEK

ESCALATORS ASCEND—The government is disposing of the problem of wage stabilization by dumping it into the lap of the Price Administrator. Wages are going to be tied to prices for the duration. The escalator principle, calling for automatic adjustments to correspond with changes in the cost-of-living index, will be extended to cover all workers. And the government will concentrate its powers on the job of holding prices down.

LAW WON'T EXPIRE—Wage-price control powers won't expire next June 30, as provided by law. Congress will vote an extension in the spring and may order general wage-price ceilings, unless the stabilizers put them on earlier. Congress is impatient with "gradual" stabilization.

RENEGOTIATION—Construction contracts with the government no longer would be exempt from review, under a renegotiation law now in prospect. Moreover, the law would apply to contracts new outstanding.

WAR DAMAGE—Urged by the Associated General Contractors of America as well as by many other industry organizations, Congress last week rushed legislation re-establishing the War Damage Corp. The program will offer protection against property damage—by either enemy or U. S. action.

PRIVATE-INDUSTRY REPRESENTATION—Keeping his promise to select a Defense Power Administration head from the private electric utility industry, Interior Secretary Chapman last week appointed Clifford B. McManus, president of the Georgia Power Co., as DPA administrator. The new administrator is widely known in the private power industry as an exponent of cooperation with federal-power activity in the Southeast.

INTERIM WATER CONTRACT—To serve water users more quickly while new Colorado-Big Thompson project reservoirs are filling—the Northern Colorado Water Conservancy District has signed an interim contract with the Bureau of Reclamation. The agreement postpones not only the effective date of the permanent water allotment and rental contracts; it also postpones the one-mill Conservancy District tax on property. The tax is a method of tapping secondary beneficiaries of the project to help repay the cost, as proposed to the President by his Water Resources Policy Commission (ENR, Dec. 21, p. 23).

BIG JOBS IN BRAZIL?—The U. S. will try to rally Latin America to an "Equality of sacrifice" campaign at a meeting of the Organization of American States this winter. U. S. will tell Latin Americans that the western rearmament program will need a lot more strategic materials from South America. Another source indicates that an immense deposit of vital manganese (for steelmaking) lies in western Brazil, near the headwaters of the Paraguay River. Getting the ore out would require development of the river for navigation, or new and enlarged railroad facilities eastward to the Atlantic coast. Either way, it would spell big construction probably with U. S. dollars.

DRAFTING TECHNOLOGY STUDENTS—Technical schools are far from agreement with President James B. Conant of Harvard and his 25-man "Committee on the Present Danger," who assert that every 18-year-old—or high school graduate—should serve two years in the armed forces. Carnegie Tech's new president, J. C. Warner, decried any such plan because it cuts a big slice out of the continuing supply of scientists and engineers, vital to supremacy over an enemy with greater resources of manpower.

It's Always Fair Weather—

● In every detail of concept and execution, New York City's great new Bus Terminal expresses the Port of New York Authority's sure touch in transportation service.

The 1500-foot overhead ramp, for example, enables 2,500 interstate buses daily to run between the Terminal and Lincoln Tunnel, without touching City streets, saving 130,000 commuters almost a half-hour a day. The ramp also connects with a three-acre public parking lot on the Terminal roof.

It's always fair weather on the ramp, for imbedded in its 1.6 acres of concrete roadway is ten miles of heating pipe, designed to melt an inch-an-hour snowfall.

The all-weather, heavy-duty ramp roadways, as well as footings and foundations, were concreted with LONE STAR AIR-ENTRAINING PORTLAND CEMENT... one of the family of quality Lone Star Cements which cover the entire range of modern construction requirements.

Owner:
PORT OF NEW YORK AUTHORITY

Ramp Structure and Deck Paving:
CORBETTA CONSTRUCTION CO., INC.
New York

Ramp Foundations and Footings:
GULL CONTRACTING CO. INC.
Flushing, L. I.

Ready-Mix Lone Star Air-Entrained Concrete:
COLONIAL SAND & STONE CO., INC.
New York

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK ROANOKE • ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

CONSTRUCTION TRENDS

DEFENSE SETS THE 1951 BUSINESS PATTERN

Mobilization dominates business prospects this year—and will for as many years as the emergency lasts.

Russia holds the key to the U. S. business outlook. The severity of inflation, shortages and controls depends on the size of U. S. military spending—and that depends, in large part, on the international outlook.

Actually, the U. S. is mobilizing about as rapidly as it can now.

Military expenditures are scheduled to rise at close to the World War II rate, roughly doubling every six months. In the longer run—for 1952 and '53—size of the mobilization will depend on international developments.

As 1951 begins, the rate of military spending is about $16 billion a year, with Armed Forces strength at about 2.5 million. Spending is scheduled to go to $25-30 billion by the end of June, with about 3.5 million men in service. By year's end military expenditures will be in the range of $50-60 billion a year.

For 1952, with munitions production in full swing, spending may reach $75 billion. Armed strength may go to five million men under present plans.

DEFENSE TAKES OVER THE ECONOMY—So far, military spending has hardly touched the economy. But this year the military program will hit business hard. Defense will be taking about 10% of all U. S. production by June, 16-18% by the end of the year.

Mobilization will fall heaviest on the metalworking industries. More than half of rearmament costs will go for hard goods.

Under present plans, U. S. metalworking industries may be completely mobilized in 1951. Defense orders, plus production for essential civilian and export needs may take the industries' entire output by fall.

This means civilians will get less of all products made of metal. Major producers of electrical appliances plan to reduce output 25% in the first quarter. By June, production of TV sets is expected to fall 50%. Other appliances may be down as much. Passenger car output will drop as mobilization speeds up, may be down one-third by mid-year.

Auto and appliance production may even be banned during the year—if it conflicts with defense production.

Construction will feel the metal shortage, too. Private homebuilding may be limited by the short supply of furnaces and other basic metal products. And many fixtures—like aluminum doors and windows—will disappear altogether.

For construction, metal shortages may be a greater threat than credit controls. Credit restrictions are expected to cut housing starts to only around 800,000 this year. With mobilization building up fast, shortages could make the cut larger.

But industrial construction will take up the slack as housing starts fall off.

This year, business plans to spend $15.6 billion—more than ever before—for new plant and equipment, according to a survey made by BUSINESS WEEK and the McGraw-Hill Dept. of Economics. And the final total may be even higher—the government wants still more expansion, is pushing it in basic industries like steel, aluminum and electric power.

Much of capital spending will go into construction. This adds up to a big, big boom in industrial building.

A YEAR OF GOVERNMENT CONTROLS—1951 will see the government develop more and stronger controls on materials, prices and wages.

Across the board cutbacks in civilian use of critical materials are stop-gap measures at best. They let metal go into toys and other non-essential uses. And, with straight percentage cutbacks, government must make endless exceptions to keep essential industry supplied with materials.

So Washington will start allocating metals according to their end-use—sooner or later—as military production increases.

For the long run—perhaps by next fall—Washington is thinking of a Controlled Materials Plan similar to that of World War II. Government will channel three basic materials—steel, copper and aluminum—from the mine to essential uses.

Use of other materials will also be restricted, of course. But the idea of CMP is that controlling the three basic metals automatically limits demand for other critical materials.

Government controls on metals and perhaps on other materials, like lumber, may cut further into private homebuilding, and non-essential construction.

But other construction is likely to get good priority. Most industrial construction is essential, will get materials. Washington wants to maintain public building, road building and other construction necessary for U. S. health, welfare and defense.

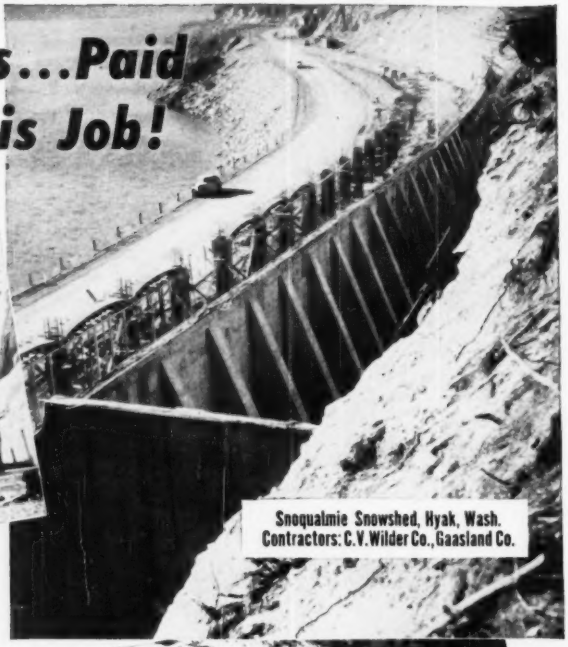
In the long run, inflation is the worst threat to American business, including construction.

To fight inflation, Washington will soon put more controls on prices and wages—first for a few industries, then general controls on all industry. Credit restrictions, including mortgage regulations, are likely to continue and may become stiffer.

Even with controls, prices and wages will go up, just as in the last war. Washington expects price and wage rises of 10%—or more—this year. That makes inflation the top problem of the year—for both business and government.

UNI·FORMS' Versatility...Speed..

Material Savings...Paid Dividends On This Job!



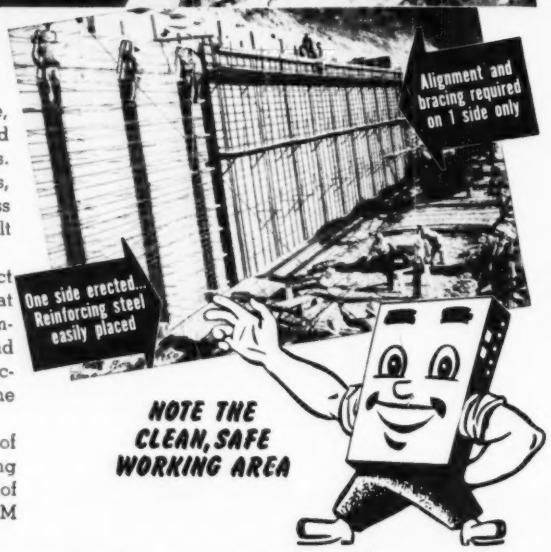
UNI-FORMS Form 95% of Concrete on Snoqualmie Snowsheds IN RECORD TIME

UNI-FORMS guaranteed great savings in time, material and labor on the Snoqualmie Snowshed projects in spite of complex forming requirements.

The retaining walls and counterforts, portals, pads, beams and columns involved countless variations and presented a seemingly difficult and costly forming problem.

Universal engineers, assigned to the project without cost to the contractors, demonstrated that standard UNI-FORMS would handle every forming requirement. The simplified assembly and easy handling of UNI-FORMS provided fast erection, pouring and stripping cycles to keep the job well ahead of schedule.

UNI-FORMS can bring the same savings of material, time and labor to your concrete forming problems. Why not investigate the advantages of UNI-FORMS today? Write for the UNI-FORM Catalog. There is no obligation.


Alignment and bracing required on 1 side only
One side erected... Reinforcing steel easily placed
NOTE THE CLEAN, SAFE WORKING AREA

BRANCH OFFICES and WAREHOUSES

BALTIMORE, MD. — HOUSTON, TEXAS
BOSTON, MASS. — SAN FRANCISCO, CAL.
CLEVELAND, OHIO — SPRINGFIELD, ILL.
DALLAS, TEXAS — TAMPA, FLA.

... COMPLETE SERVICE WHEREVER YOU BUILD!

UNIVERSAL FORM CLAMP CO.

CONCRETE FORM SPECIALISTS FOR 39 YEARS

General Offices and Factory... 1238 N. Kostner, Chicago 51

Radioisotopes May Aid Engineers

THE CONSTRUCTION INDUSTRY, like many other industries, is not yet fully aware of the opportunities opened to it by the cheapness, convenience, variety and strength of materials available today from nuclear reactors. Availability of radioisotopes at relatively low cost makes possible introduction of a new technique for the solution of many engineering problems. In some cases, problems that could not be solved before may now be solved; in others, the new solution may be far more economical than existing ones.

An example is the determination of soil density when an undisturbed soil sample cannot be obtained. R. K. Bernhard and D. Berdan of Rutgers have proposed a setup (ENR July 6, p 28) in which a radioisotope is lowered through a casing into the ground at one point and an electrometer tube and ionization chamber are lowered at another point. An indicator above grade would report changes in gamma-ray emanations, which would be a measure of changes in soil density between the two points.

Used as tracers, radioisotopes are assisting research in sewage and water pollution. One application has been in a study of what happens in settling tanks. Another has been in the determination of sewage-dispersion patterns in large bodies of water.

Applied to radiography, radioisotopes may prove less expensive than X-rays or radium. Radiography has been quite successful in non-destructive testing. As costs come down and more experience is gained, its use may become more widespread.

Recently, Sam Tour & Co., New York consulting engineers, used this technique to locate a plugged pipe in a floor of its building. In this way, the floor was not damaged in the search and a considerable sum of money was saved. A small capsule of radium was placed above the floor and a film was held against the ceiling below. The resulting photograph showed the extent of the buildup and also that the pipe was so badly corroded that it was about to fail. Immediate replacement saved future emergency repairs. As a result of this experience, the engineers suggest that larger areas can be probed without film by using radioisotopes and a Geiger-Muller detector with proper modification.

Another possible application is in the testing of structural welds. In some parts of the country, welding is not permitted unless all welds are X-rayed. The cost of X-raying frequently makes field welding uneconomical. Consequently, if a radioisotope, like cobalt 60, is used, radiographs may be made in the field at lower cost than heretofore. Relatively inexpensive, small quantities of cobalt 60 can emit rays capable of penetrating 15 in. of steel.

No doubt, as time goes on, many more applications of radioactivity will be found in the construction industry. A lot depends on whether the Atomic Energy Commission can and will make suitable radioisotopes available at low cost.

More Uniform Highway Load Limits

JAMES K. KNUDSON, a member of the Interstate Commerce Commission who now heads the Defense Transport Administration, urged the men attending the recent meeting of the American Association of State Highway Officials to do all they could toward elimination of needless restrictions on truck sizes and weights. In so doing he stressed the point that he was not asking that highway departments raise load limits that are known to be necessary to protect their pavements from damage due to frequent overloading. What he hopes to see eliminated in the interest of more efficient use of the nation's highway during the present emergency are the size or load limits found in many state laws that have little or no relation to the structural strength of pavements or the safety of highways.

Mr. Knudson made a like appeal to the National Association of Railroad and Utility Commissioners at its meeting a few weeks in advance of the highway officials gathering. He told the commissioners that there is justification for some difference in size and weights limitations, but that regulations that "harrass, hamper and act as a barrier to transportation" cannot be condoned.

There is much to be said in favor of more uniformity in the regulation of trucks, and it may be helpful to have both state highway officials and state utility commissioners convinced that more uniformity is desirable, because state legislature can be expected to be receptive to their opinions. But if Mr. Knudson wants to facilitate action in state legislatures he should also make a like plea to the Association of American Railroads, telling that organization that he will turn the spotlight of publicity on any railroad lobbyist who opposes efforts to change the size or weight limits in states where the present limits are more restrictive than is necessary to protect the states' roads from structural damage. It is well known that railroad lobbyists are continually working for greater restrictions on truck operators or for retention of existing restrictions, many of which are archaic or of no value in protecting highways from damage due to overloading.

ENGINEERING NEWS-RECORD is a consolidation of Engineering News and Engineering Record, effected in 1917. The Contractor was consolidated with Engineering News Record in 1918. Engineering News was founded in 1874 as The Engineer and Surveyor, which title subsequently became The Engineer, Architect and Surveyor, Engineering News and American Railway Journal, and finally Engineering News. Engineering Record was established in 1877 as the Plumber and Sanitary Engineer. Subsequently it became The Sanitary Engineer, Engineering and Building Record, and, finally, Engineering Record. All rights to the above titles are reserved.

Better for paving work

Contractors find that a mix made with Duraplastic air-entraining portland cement dumps, spreads and finishes easily. And it allows finishing closer to the paver, gives earlier protection for curing. Duraplastic requires less mixing water for a given slump, makes concrete more workable, more plastic, more cohesive and more uniform.

Makes more durable concrete

Duraplastic minimizes bleeding and segregation. Thus, the finished concrete is fortified against effects of freezing-thawing weather. And it is highly resistant to the scaling action of de-icing salts. (Below, screeding Duraplastic concrete on U. S. #24 dual-lane highway; Roanoke to Huntington, Ind.)

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

A UNIVERSAL ATLAS PRODUCT

Makes Better Concrete at No Extra Cost

ENR D-116

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

JANUARY 4, 1951 VOL. 146, NO. 1

Survey of steel expansion shows $2 billion for plant

Steel shortage of 5,000,000 tons threatens for 1951 despite expansion plans; Big Steel plunges into production battle with $398,000,000 plant—ore reserves dangerously low

David E. Reilly
Assistant Editor

Steel, behemoth of industries, is taking action to increase its stature. Cold statistics and the demand of a not-so-cold war point up the reasons:

Although, in 1950, steel output was just 12 days short of 100,000,000 ingot tons, in 1951 an even larger steel output will be at least 5,000,000 tons too short. This in spite of expansion plans that will cost the industry $2,000,000,000 over the next 18 months.

• **The measuring up**—The shortage appears immediately, simply by measuring defense needs and current civilian demand for steel against steel production in the new year.

In 1950, military requirements for steel were scarcely felt at all. Only 1,500,000 tons of finished steel or 2,000,000 ingot tons went into direct military use. Thus only 95,000,000 ingot tons of the year's 97,000,000 ton output were used by the civilian economy in the old year.

But in the year ahead the civilian economy will be wanting that same 95,000,000 tons of steel.

And as the new year turns the mid-century axis, users from coast to coast are taking steel direct from the mills and putting it into production. Reason: There is no steel stockpile.

Even after a record year of production steel supply is "tight."

• **Defense needs**—Now if you enter the military need (say 6-8,000,000 ingot tons) against projected output of 103,000,000 ingot tons for 1951, steel supply is just above its break even point.

Then, add the steel that must go into expansion of basic defense industries and steel supply gets into a danger area. Ore boats and freight cars alone—requiring 960,000 tons of steel—are scheduled for the first quarter of this year. If ore boats and rail expansion plans are pushed at this rate, these projects may absorb 4,000,000 tons of steel this year.

And finally enter steel's own metal needs for its much publicized expansion, and the shortage rounds itself out. To produce an "integrated" ten million ingot tons of steel, the industry itself must absorb three million tons of finished steel.

(Much of the expansion that is going on is not an integrated mine-to-rolling mill program and may require less steel. But for purposes of estimate this figure is a guide.)

• **The vanishing millions**—Added up (on a conservative basis) these figures indicate that at least five million tons of steel will not be available for the civilian economy in 1951. Whether this is to be feared will depend upon the reaction of steel users everywhere should the current tight situation in steel fray and snap.

Someone is going to have to go without steel. This fact could cause panic. Already there are reports of multiple ordering and grey markets. Speculative hoarding and over-ordering loom ahead—all the insane and petty practices that unbalance delicate supply situations and exaggerate minor shortages into giant dislocations.

In 1951 fear may be more dangerous than lagging production of steel.

• **The road ahead**—Facing these problems, steel industry expansion plans should by no means be disparaged. Though these plans may not be adequate to the short term demands of the moment, the industry has committed itself to a giant undertaking that rivals atomic energy in cost.

As it is, current plans envisage nearly $2 billions of expenditure to attain an added capacity of 9,400,000 net tons by 1952.

If a complete, integrated expansion of this size was being undertaken by the industry, starting from scratch, the effort would cost stockholders nearly $2,820,000.

Surveying the plans of eleven of the nations outstanding integrated steel companies and ten major semi- and non-integrated companies ENGINEERING NEWS-RECORD finds that steel expansion plans announced to date will cost $1,969,000,000. Most of this money will be spent in 1951. Golden lining to the cloudy business horizon of the construction industry is this huge plant expansion expenditure for the year and a half. (See ENR's Steel Expansion table on page 24.)

• **No lavender gloves**—The steel industry is plunging into its new year's task with abandon.

Already, U. S. Steel, has kicked over the traces of its too precise work schedule on the $398,000,000 Morrisville, Pa., plant. (ENR Nov. 16, p. 28.) The great mill, which will ultimately turn out more than 1,800,000 tons of steel a year, will be built to its full planned capacity just as fast as possible. If blast furnaces are finished before coke ovens, coke will be shipped in. If Venezuelan ore fields are not opened in time to feed the two furnaces ore will be purchased elsewhere. If the nine open hearth furnaces are not finished in time to consume the new pig iron it will be shipped out. If delays hold up blast furnace construction, pig iron will be shipped in.

• **They rush for gold**—With almost equal urgency steel has been rushing to get capital for this plant expansion. New equity capital, lines of credit, mortgage loans, and speedy amortization have been favorite producers in getting funds.

Jones and Laughlin has already arranged a $40,000,000 bank credit, a $75,000,000 certificate of necessity from the government for five-year writeoff, and a novel loan from General Motors providing $28,000,000. On this basis the company has some $228,000,000 available for expansion.

Many other steel companies have also taken the road of fast amortization. In all more than $900,000,000, or nearly one half of the new capital cost of steel expansion has been submitted for fast writeoff over the next five years. (ENR Nov. 30, p. 84).

Kaiser Steel has taken a different path. It has just recently completed sale of $40,000,000 of preferred and common stock to a syndicate of 234 investment underwriters. To round out its financing, $60,000,000 of first mortgage bonds have been sold to ten insurance companies, and a six year line of bank credit arranged on which Kaiser can borrow up to $25,000,000. On this basis a Reconstruction Finance Loan has been retired which amounted to $91,185,990.80.

(*Continued on page 24*)

Steel expands at war rate

(Continued from page 23)

By similar financing Iron Ore Company of Canada has been able to raise the first $100,000,000 for its five-year, $200-million project—the opening of the Labrador ore fields.

• **Going the limit**—Actually steel is expanding at a wartime rate.

In World War II steel output (ingot tons) was increased from 81,619,000 in 1941 to 95,000,000 in 1945. This was an average annual increase of 3.5 million tons per war year.

Since 1945 the increase in capacity has been more deliberate. As of the end of 1950, steel capacity (not output) was estimated at 103,000,000 tons. Industry plans for the year ahead will bring that capacity up to 107,000,000 tons by December 31. By the end of 1952 the expansion will provide at least 110,000,000 ingot tons of capacity. But it should be noted that weather conditions, strikes within steel and related industries may hold actual production well below this capacity.

Even in 1951 with a big expansion program on steel could fall short of 103,000,000 ingot tons.

• **The secret hobble**—Government critics of the steel industry—voicing demands for a current output of 110,000,000 ask the industry why it does not have more capacity to show. They might as well ask "Where are the snows of yesteryear?"

All out concentration on building steel manufacturing facilities is not likely to bring about the desired production goals.

Deficits in iron ore supplies are expected to continue until 1955. These will keep steel output behind theoretical capacity even at the present, allegedly slow expansion rate.

In 1950 ore requirements of the industry were estimated at 112,900,000 gross tons while ore supplies were only 104,200,000. As a result ore stockpiles, are dwindling. Unless mining of Canadian, Chilean, Venezuelan, and Liberian ore is pushed, along with the ore barge program, steel shortages will be acute.

During the last war peak military production required 22.8 million tons of finished steel, or 30 million tons of ingot steel. On the average some 21 million ingot tons a year were needed for military production alone.

Steel Expansion, 1950-1952

Data showing details of steel expansion plans of eleven of the nation's integrated steel companies.

By whom	Where	What	How much
Armco	Middletown, O.	Coke ovens, blast furnace, soaking pits	$153,992,406
	Houston	Blast furnace, electric furnace	
	Kansas City	Electric furnace (Other details not announced.)	
Bethlehem	Franklin, Pa.	Rebuilding 21 open hearth furnaces	32,000,000
	Buffalo	Installing 30 soaking pits	
		Plant improvements already completed in 1950	93,000,000
Granite City	Granite City, Ill.	Building coke ovens, blast furnace, open hearths, and blooming mills	50,000,000
Inland	E. Chicago, Ind.	Building 4 250-ton open hearth furnaces and steel galvanizing plant	35,000,000
Jones & Laughlin	Cleveland	Expanding Otis Works	28,000,000
	Pittsburgh	Expanding open hearth furnaces	35,000,000
		Other funds available for expansion	165,000,000
Kaiser	Fontana, Cal.	One 1,200-ton open hearth furnace, blooming mills and soaking pits	24,500,000
National	Zug Island, Ecorse, Mich.	Blast furnaces, open hearth furnaces coke ovens	20,000,000
	Wierton, W. Va.	No details	7,078,000
Republic	Cleveland, O.	Building 126 coke ovens, 1,400-ton blast furnace, 4 open hearth furnaces	75,000,000
	Birmingham	Building 63 coke ovens, enlarging 2 open hearth furnaces	16,000,000
Sharon	Farrel	Building 800-ton blast furnace, rebuilding open hearth furnaces	49,000,000
U. S. Steel			711,000,000
Carnegie-Illinois	Morrisville, Pa.	Building plant to have 2 blast furnaces, 9 open hearth furnaces, 170 coke ovens, and rolling mills	(351,000,000)
Columbia	Pittsburg, Cal.	Rolling mills	(28,000,000)
Geneva	Geneva, Utah	One open hearth furnace, soaking pits, overhead cranes	(41,525,000)
National Tube	Morrisville, Pa.	Skelp mill, 2 Fretz Moom continuous buttweld pipe mills galvanizing facilities	(46,000,000)
Tenn. Coal, Iron & RR	Birmingham	Building 2 open hearth furnaces stepping up output of blast furnace	(4,000,000)
Youngstown Sheet & Tube	E. Chicago, Ind.	Enlarging 14 open hearth furnaces, building 4 open hearth furnaces and blast furnace. Installing bigger cranes, ladles.	100,000,000
		Total	**$1,594,568,000**

In addition 10 semi- and non-integrated steel companies plan expenditures that total $185 million for producing finished steel. Full details of their plans are not known. The companies are: Allegheny Ludlum, Crucible, Detroit, Empire, Green River, Lone Star, Northwest Steel & Wire, and Sheffield. Also proposed for New England is a $300,000,000 plant along lines of the U. S. Steel Morrisville project. The new five-year Labrador ore program, Iron Ore Co. of Canada will also cost $200,000,000.

New York seeks U. S. cash for dual-purpose shelters

Hopeful that current deliberations of the Senate Armed Services Committee (ENR Dec. 28, p. 5) might result in necessary funds, the nations biggest city this week revealed plans for protecting its citizens in the event of an atom-bomb attack.

New York's Mayor Vincent Impellitteri, his construction coordinator, Robert Moses, and Sidney Bingham, chairman of the city's Board of Transportation detailed these plans:

Immediate construction of the long-planned Second Avenue Subway on Manhattan's East Side, with provisions for extra-deep tunnels that could be used immediately as shelters and eventually as space for extra trackage; a series of underground parking garage-shelters; remodeling a number of existing stations to serve as shelters—including flood-doors to seal off East River Tunnels of the subway system; an "all-out drive" (of which no details were announced) to clear up the city's traffic tangle. The officials estimated that once federal money is available (from a $250 million Civil Defense fund now under debate) construction of the new subway might take two years. Shelter portions, however, might be built more quickly than the rest of the project.

Copper Cutback to hit construction hardest of any orders issued so far

Prohibitions to come in January, in an equitable prior notice, for application April 1st will specify end uses to be curtailed

Copper-Aluminum prohibitions on end-use products, to be issued early in this month, will further restrict construction in 1951. The National Production Authority plans to implement broad cutbacks by notifying manufacturers that—after April 1st—they cannot use the essential metals in certain prescribed products.

• **Fair prior notice**—NPA fully realizes that the advance warning will cause a buying scramble, with some black-market speculation and hoarding. But the agency regards prior notice as imperative—in fairness and equity—to allow users to make necessary adjustments.

Broad policy is to apply bans of this kind on the makers of the products and thus spare the users who buy and install the items. But some products cannot be controlled by this simple, basic method.

An example is the original copper cutback order, M-12, issued Nov. 29. As noted in ENR, Dec. 14, p. 17, this order extends beyond the manufacturer to the contractor who puts in place copper sheet, wire, or tubing. The order includes brass and other alloy products containing 40% or more of copper by weight.

• **Early 1950 is base**—During January and February, a contractor may use for non-defense work only 85% of his average monthly use during the first six months of 1950. In March the allowance drops to 80%.

Similarly, the limitation order on aluminum, M-7, as amended Dec. 1, restricts the use of common basic forms and products to 80% in January and February, and to 75% in March, of the average monthly use during the base period—the first six months of 1950.

The aluminum order binds the construction contractor as well as the manufacturer. It is not enough, NPA says, to limit the quantity produced of such things as sheet, strip, plate, structural shapes, rivets and electrical transmission cable. Along with the cutback in production, the amount used in construction must be similarly curtailed.

Prohibitions to come out in January, for application three months later, will further specify the end uses to be curtailed. For example, cutting down the output of sheet does not limit use of the product for purposes that are unnecessary, such as ventilating ducts. And end use of this kind probably will be barred. Copper prohibitions will go into similar detail.

• **Blow to construction**—Copper limitations hit construction the hardest of any orders issued thus far. No construction project can get along without endless copper items, from wiring and valves to roofing flashing and water stops.

Government agencies estimate that direct copper uses in construction take 18 to 19% of the total available U. S. supply, which amounted to about 1,500,000 tons in 1950. Including indirect uses, the total consumption of copper for construction is more than 20%—up toward 25% of the national total.

Center Hill dam dedicated as new TVA power plant

Center Hill dam, east of Nashville, has been dedicated and is now in operation as another major power plant in the Cumberland River valley. It will add its current to the TVA's distribution system.

The dam is 240 ft high and harnesses the waters of the Canary Fork River. The dam has been a project of the army engineers and was completed for flood control purposes in 1948. The dam has created a reservoir of around 2,000,000 acre ft. The total installed capacity at the Center Hill power plant will be 135,000 kw hours.

Four contractors chosen by AEC for new plant

F. H. McGraw and Co., Hartford, Conn., will be the principal construction contractor for work on the Atomic Energy Commission's new uranium-235 production plant to be built on the site of the Kentucky Ordnance Plant, at Paducah.

Estimated cost of the work to be done by the McGraw Co. is $350,000,000. The contract includes all structures at the site and will install production equipment. Structures included are process buildings, supporting service facilities and administrative units.

Three other architect-engineer firms selected are:

Giffels and Vallet, Inc., Detroit, for preliminary engineering and design of the process plant and inspection of its construction.

Sargent and Lundy, Chicago, for power studies and the design and inspection of construction of power facilities.

Smith, Hinchman and Grylls, Inc., Detroit, for specialized design and engineering for sanitary and fire water systems, sewer system and sewage treatment plant, steam plant, together with all the administrative and auxiliary buildings.

The Carbon and Chemicals Division of the Union Carbide and Carbon Corp., which operates the U-235 plant at AEC's Oak Ridge, will operate the plant. The corporation is also responsible for process design and for the procurement of special equipment and all type of materials needed to keep the completed plant producing effectively.

THREE-LEVEL CROSSING—Aerial view of a busy, intersecting traffic point, near Woodbridge, N. J. Here the New Jersey Turnpike passes beneath a double-deck structure carrying Route 4 and Main Street, itself completed only recently. Main street is shown (vertically) on the right.

Revival of Lanham Act powers planned; war housing will cost $250,000,000

Emergency facilities for defense workers would include schools, community structures, and sewers; easy mortgage money for apartments also planned

January will see a revival of Lanham Act authority. Administration housing officials are readying for the 82nd Congress a defense bill that will ask authorization of about $250,000,000 for government-built-and-operated rental projects and community facilities.

An even bigger authorization will be requested for FHA mortgage insurance of multiple-family rental housing to be rented to defense workers. The authorization figure most often mentioned is $1-billion, but there has been talk of a bigger request for from $1.5 to $1.75 billion.

The proposed legislation is purely a standby measure, to lie on the shelf until defense needs require that it be used. No one is predicting when that may occur, but the need may develop quickly.

• **Utilities, too**—Of the money for projects of the Lanham Act-type, built during World War II, about one-third would go into utilities and two-thirds into housing. On the basis of $250 million, that division would allow for about 16,000 housing units and some $110-120 million for sewers, water mains, power lines, paving, and a host of similar community facilities.

Decision as to location and size of the defense project—whether government-built or privately financed with FHA-insured mortgage money—would rest with Washington's top housing official, HHFA Administrator Raymond M. Foley. His actions, in turn, would depend on what the Office of Defense Mobilization and the Department of Defense told him was needed.

• **Emergency boxes?**—For the government-financed housing, nobody in Washington want to see a return of the temporary boxes and quonset huts that went up hurriedly in the last war, to remain as eyesores still in use for years after hostilities ended. But the pressure of emergency could quickly dissolve all objections to such expedients.

Government housing would be assigned to local bodies—such as housing authorities—for construction and operation. Likewise, utilities and community facilities, including any schools or other community structures, would be turned over to local governments for management and maintenance.

For construction of all the Lanham-type projects, Congress would first have to vote the cash. But the FHA mortgage insurance authorization would require no later money vote in Congress. Mortgages could be insured—up to the amount of coverage authorized—at any time when the defense agencies wanted new privately owned rental housing in any locality.

• **Easy money again**—To make the bait sufficiently attractive to assure a quick bite by money-hungry builders, the bill would offer inducements similar to those of the late-lamented Section 608. That section of the National Housing Act, which passed out of existence March 1, became much discredited in its last two years, but it did inspire a huge wave of apartment building.

Chief inducement of the new law probably will be the same as that of 608—mortgage insurance so broad as to make it possible for a builder to erect and own a rental property with little or no investment of his own money. Such a sure-fire come-on would bring out the builders in droves—particularly with the materials priorities that undoubtedly would be attached to defense housing projects.

But the cream won't be quite so high in butter fat as it was under 608. The government housers have learned by experience. This time they will try to let the builders carry at least a small share of the risk. Then, too, the government this time will tell the builders where to build. To a man who is risking some of his own money, that means looking beyond the defense period to future years when the locality may not be crowded with families seeking apartments.

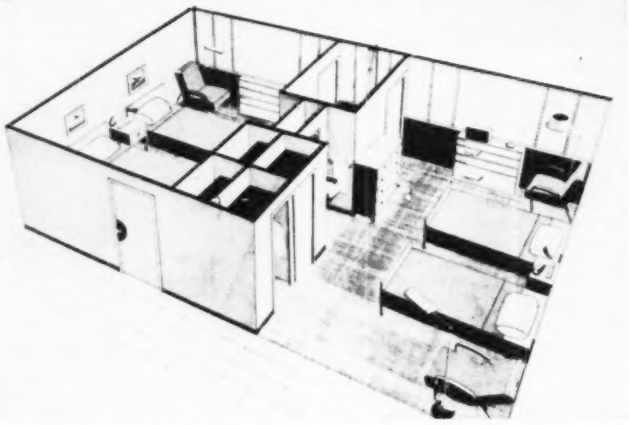
Nationwide building cost conferences started

A nationwide series of building cost conferences started on the West Coast in mid-December in Los Angeles, San Francisco, and Seattle—under the joint sponsorship of the National Association of Housing Officials and the Public Housing Administration.

Purpose of the "schools" is to emphasize ways and means of reducing the current costs of low-rent housing construction, which have soared beyond the limitations in the Housing Act of 1949.

The cost conferences are being held in the 11 cities where Public Housing Administration field offices are located. Sessions will be held in January in Boston, New York, Philadelphia, Detroit, Richmond, Atlanta, Fort Worth, and Chicago. Local housing authorities in each field office area are being invited to send representatives to the conferences and bring architects and engineers.

A basic "textbook," "Economy in the Design of Low-Rent Housing," has been prepared for the classes.



THEY THREW AWAY THE BOOK—Designers of new 216-man, hotel-type barracks for Offutt Air Force Base, Omaha, departed from past custom when they drew plans for barracks arranged in four-man units. Perspective shows a typical layout for four airmen. A lavatory is to be placed in each room, and the four men will share a toilet and shower. Although much more comfortable, new enlisted men's quarters are expected to cost less, through sandwich type panels and prefabrication.

CONSTRUCTION BUSINESS

New money tops 1949 by 24%

Both security sales to finance construction and federal appropriations are higher; state, municipal housing notes lag

New capital to finance construction closes its 1950 books at $9,027,987,000, a 24% gain over 1949. These sources produced these funds:

- **Federal aid** for highways, hospitals, airports, $522 million, an increase of 21% over last year.
- **Federal appropriations** for fiscal 1950-51 for construction, $2,829.1 million, an increase of 65% over 1949-50. This includes the first deficiency bill but not the second, which is now in conference and should add $2 billion (ENR Dec.28, 1950) to the construction capital figures early in 1951. These 1950 new capital figures do not include authorizations that provided $530 million in contract authority, nor do they include the new bill, now at the White House awaiting signature that will provide $1,658 million contract authority to Army, Navy and Air Force for defense construction at home and abroad. (For details see story on this page.)
- **Corporate securities** sales or private placements netted $2,557.8 million to finance private buildings and improvements including pipelines and utilities. This is an increase of 18% over 1949.
- **State and municipal** bond sales total $2,345.6 million to finance public works, except public housing. These top 1949 by 10%.
- **State and municipal** housing notes at $773.5 million dropped 10% behind 1949 volume of this financing.

Congress promises money for defense construction

As passed by the House Dec. 20, without dissent, and by the Senate and sent to the White House, Dec. 21, the military construction authorization bill would let the Army, Navy and Air Force go ahead with a $1,658,000,000 construction program in this country and abroad.

Actually, because of the emergency, most of the funds covered by the authorization already had been approved by the House and by the Senate appropriations committee in bill to provide a deficiency defense appropriation.

The funds will be applied against hundreds of urgent defense projects which eventually are expected to cost several billion dollars. Most of the Army and Air Force projects were classed as secret, although the Navy made public most of its plans for new construction.

The Army authorization totals $383,396,900 of which $291,760,800 would be spent in the U. S. and $91,636,100 overseas and in Alaska. For Alaska is allotted $28,100,000; for Japan, $4,400,000; for troop housing in Hawaii, $900,000; and for other overseas bases, $57,200,000.

The Navy would spend $381,655,310, $327,548,610 in this country and $54,106,700 abroad. The Air Force authorization totals $885,604,000 of which $451,467,000 would be spent in this country and $367,150,000 elsewhere. The Air Force would spend the remaining $66,987,000 on the radar warning system around this country and Canada.

DEPARTMENT OF THE ARMY	
Continental U. S.	
Facil for Army field force stations	$79,722,525
Facil for U S Mil Academy	1,057,400
Adv design of future const projects for Army field force stations for U S Mil Academy	1,000,000
Facil for tech service stas:	
Ordnance Corps	38,025,275
Quartermaster Corps	23,277,600
Chemical Corps	21,129,000
Signal Corps	44,814,500
Corps of Engineers	11,677,600
Transportation Corps	10,956,200
Finance Corps	23,242,000
Adjutant General's Corps	2,900,000
Army Medical Service	8,663,200
Classified construction	20,000,000
Adv design for future const proj for tech service sta	2,000,000
Acquisition of land or real property	3,295,500
Outside Continental U. S.	
Alaska	28,105,600
Japan	4,415,000
Hawaii	923,900
United States Army, Europe	53,111,600
United States forces, Austria	4,080,000
Adv des of future constrn proj for overseas bases	1,000,000
Spec weapons proj—constrn at classfied install	7,500,000
DEPARTMENT OF THE NAVY	
Continental U. S.	
Fleet facilities	5,460,380
Aviation facilities	226,913,000
Marine Corps facilities	30,055,000
Ordnance facilities	43,464,480
Medical facilities	478,000
Supply facilities	5,490,000
Communication facilities	7,062,750
Classified facilities	6,000,000
Advance planning	2,625,000
Outside Continental U. S.	
Alaska advance planning	660,000
Fleet facilities	7,430,700
Aviation facilities	31,542,500
Marine Corps facilities	1,500,000
Ordnance facilities	300,000
Supply facilities	1,950,000
Communication facilities	10,723,500
DEPARTMENT OF THE AIR FORCE	
Continental U. S.	
Operational support facilities	199,654,000
Training facilities	133,782,000
Depots and logistical facilities	58,654,000
Commun & navig aid facil	8,432,000
Research & devel & test facil	22,864,000
Classified facilities	5,531,000
Other construction	22,550,000
Outside Continental U. S.	
Operational support facilities	263,497,000
Depots and logistical facilities	31,420,000
Commun & navig aid facil	26,535,000
Classified facilities	14,870,000
Other construction	30,828,000
Aircraft Control and Warning System	
Facil at classified locations (radar fence)	66,987,000

Cement price rise for '51

Huron Portland Cement Co. has announced price rises of 10 and 15 cents per bbl for the first quarter of 1951. Here are the new prices of bulk cement by cities: Alpena, Mich. $2.50, up 15 cents; Detroit, Wyandotte, Buffalo, Cleveland, Toledo, $2.60, up 10 cents; Saginaw, $2.60, up 15 cents; Duluth, $2.65, up 15 cents; Muskegon, $2.70, up 10 cents; Oswego, Milwaukee, Green Bay, $2.75, up 15 cents.

Austin index climbs again

Industrial building costs climbed 4 points, or 2.3% during the fourth quarter of 1950 according to the Austin Co. building cost index. The new value for December is 179, based on 1926 as 100, 11% higher than it was a year ago. Before the fighting started in Korea it had held steadily for a year at 161. The December rise this year is due to the increase in steel prices.

Steel orders mount

Bookings for fabricated structural steel were 230,020 tons for November, 1950, up 122% from November a year ago. This brings total bookings for the eleven months to 2,286,821 tons, an increase of 75% over last year as reported by the American Institute of Steel Construction.

Shipments in November at 154,640 tons were 31% higher than a year ago. For the eleven-month period shipments were 1,741,265 tons, an increase of only 1.5% over 1949.

Tonnage available for fabrication within the next four months is 762,732, up 33% from that available a year ago.

To descalate lumber

So its customers will benefit it from a drop in prices during the term of a contract, Marsh and Turman Lumber Co., Chicago, has reinstated a descalator clause used effectively in 1947. Under this plan the company gives the buyer a protected price based on present competition and states that such price will be the ceiling. If it can be reduced during the progress of the contract the customer is to get the benefit.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 75, went to press.)

Medical Center—University of Minnesota, Minneapolis, Minn., will open bids February 21, for $9,000,000 Mayo Memorial Medical Center at University of Minnesota. C. H. Johnston, St. Paul, is architect.

Dam and Power Plant—Puget Sound Power & Light Co., Seattle, Wash., plans raising Rock Island Dam and expanding power plant on Columbia River, $26,000,000. Stone & Webster Engineering Co., Seattle, is consulting engineer.

Housing—Williams Construction Co., Columbus, Ga., has been awarded contract to build two housing projects in Columbus, at $3,788,995 by the Columbus Housing Authority. L. D. Raines, W. D. Talley, and E. Oren Smith, Columbus, are engineers.

Waterworks and Sewers—Village of Richfield, Minn. will vote on January 23, for authorization to construct a waterworks system to cost $6,469,899 and a sewer system at $6,772,721.

Housing—Louisville Housing Commission, Louisville, Ky. will take bids January 15, for third time on South Housing Project. Former bids were rejected on the $7,000,000 job. Fred Hartstern, Louis & Henry, Louisville are architects. E. R. Ronald & Associates, Louisville, are engineers.

Barracks, Warehouses—U. S. Engineers, Granite City, announced a $5,362,400 improvement program for the U. S. Engineers Depot, at Granite City, Ill., to include barracks, warehouses, storage buildings, roadways and utilities.

Catalytic Cracking Plant—Union Central Exchange, Billings, Mont., is taking bids for the construction of catalytic cracking plant at oil refinery at Laurel, Mont. Estimated cost is $3,000,000. Universal Oil Products Co. and Refinery Engineering Co., Tulsa, Okla., are consulting engineers.

Laboratory—Grove, Shepherd, Wilson & Kruge, New York, N. Y. have been awarded a $3,694,500 contract to build laboratory building at Cincinnati, O., for the U. S. Public Health Service. The Public Buildings Administration, Washington, D. C. made the award.

Housing—I. E. Millstone Construction Co., St. Louis, Mo., was lowest bidder at $3,113,000 for constructing Kirkpatrick Homes Project, in Granite City, Ill. when the Granite City Housing Authority opened bids December 26.

Power Plant—South Carolina Power Co., Columbia, S. C. plans a $12,000,000 power plant at Aiken, S. C.

Highway—Pennsylvania State Highway & Bridge Authority, Harrisburg, Pa., received a $3,859,750 low bid from Francis A. Canuso & Son, Philadelphia, Pa., for improving divided highway in Montgomery County. Bids were opened December 27.

Incinerator—City of Miami, Fla. will take Bids January 17, for an incinerator to cost $3,000,000. Maurice H. Connell & Associates, Miami, are engineers.

Housing—Southeastern Construction Co., Charlotte, N. C. was low at $3,180,600 when the Roanoke Housing Authority, Roanoke, Va. opened bids December 19, for housing project.

Apartment—Matroland Building Co., Inc., Brooklyn, N. Y. plans constructing two apartments, in Brooklyn to cost $3,078,000. Morris Rothstein & Son, Brooklyn, are architects.

Housing—U. S. Engineers, Seattle, Wash., plan to select a sponsor for 750 housing units at Fort Lewis, Wash. to construct, finance and manage project under the Wherry Act. Estimated cost is $5,000,000.

Department Store—Abraham & Straus, Brooklyn, N. Y. awarded contract for the design and construction of a department store, at Hempstead, N. Y. to the Austin Co., New York, N. Y. Estimated cost is $2,500,000.

Cement Plant—Walsh Construction Co. and Gifford Hill Co., Dallas, Tex., will built a cement plant at Sweetwater, Tex. for the Lone Star Cement Corp., Dallas, Tex. at $2,510,000.

Housing—J. W. Bateson Co., Dallas, Tex. was low at $3,533,625 when the Chattanooga Housing Authority, Chattanooga, Tenn., opened bids December 21. Selmon T. Franklin, Chattanooga, is architect.

Library—University of Michigan, Ann Arbor, Mich., plans library addition to cost $3,100,000.

Airfield—Department of the Navy, First Naval District, Boston, Mass., plans airfield expansion at Quonset Point, R. I., estimated cost $3,130,000.

COSTS AND VOLUME

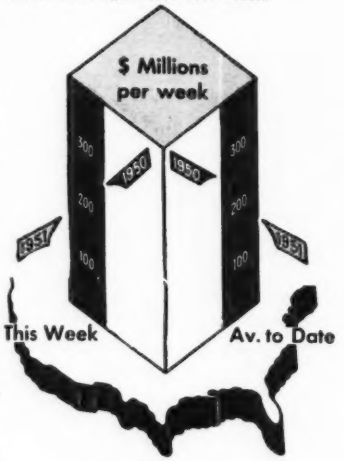
ENR INDEX NUMBERS

Index Base = 100	1913	1926	1949
Constr. Cost. Dec.'50	528.73	254.16	110.84
Bldg. Cost... Dec.'50	390.14	210.89	110.90
Volume .....Dec.'50	759	308	219

Activity This Week

As reported to ENR (in millions of dollars)

Note: Both figures for 1950—323.4



Amount of contracts let

	First week Week of Jan. 4, '51	1950	% chge
Federal	$10.1	$216.1	−95
State & Mun.	80.7	52.8	+53
Total Public.....	$90.8	$268.9	−66
Total Private.....	63.4	54.5	+16
**U. S. Total	$154.2	$323.4	−52

Contracts by type of work

	First week This Week	1950	% chge
Waterworks	$2.6	$3.2	−19
Sewerage	7.0	4.2	+67
Bridges	12.3	6.5	+89
Highways	10.3	15.6	−34
Earthwork, Waterways	3.5	1.4	+150
Buildings:			
Public	23.4	228.2	−90
Housg., pub.....	27.2	7.1	+283
Housg., priv.....	14.1	37.0	−62
Commercial	29.8	9.2	+224
Industrial	16.6	5.8	+186
Unclassified	7.3	5.0	+46

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	Cumulative 52 wks 1950	1949	% chge
NON-FEDERAL ...	$522.0	$432.5	+21
Corporate Securities	2,557.8	2,169.8	+18
State and Municipal:			
Excl. housing ..	2,345.6	2,127.5	+10
Housing	773.4	862.8	−10
FEDERAL	2,829.1	1,711.7	+65
Total Capital	$9,027.9	$7,304.3	+24

CIVIL DEFENSE

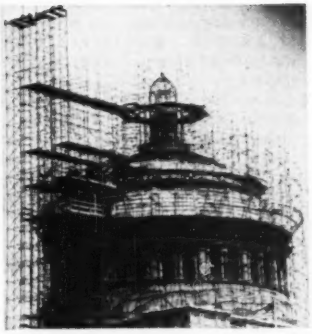
Meet the dosimeter, the army's new device that measures exposure to atomic radiation, yet can be worn about the neck like a "dog-tag." The dosimeter is a small metal case containing a flat paper package of photographically sensitized film and a pod of developing fluid. Exposure to gama rays turns exposed film white. The test takes about one minute. The film plaque test strip has a scale on it, and should cost about five cents. The whole kit can be made for less than one dollar.

Massachusetts prepares—Boston subways and underground stations will be used as public shelters in case of enemy bombing attacks. Mayor John B. Hynes and parties interested in the garage and bomb shelter proposed for Boston Common will meet with the RFC in a plea for financial help. Various sections of the structure could be used as the work progressed. Vital records are being removed from the State House to safety. Boston's emergency phone system is underground.

Illinois activities—The state legislature is expected to establish a civilian defense organization, with emergency powers to act should an atomic attack break out. A control center has been established in the sub-basement of the Chicago Museum of Science and Industry and engineers are studying possibilities of erecting two bomb shelter-garages in Grant Park.

Underground parking areas for use as air-raid shelters are being considered for state-wide building by New Jersey civilian defense authorities. Such air-raid shelters would serve a dual role. They might be constructed with highway funds when road construction is halted by war. The shelters would also serve to clear slum areas and provide playground facilities above ground.

Emergency use of New York State's Civil Defense organization was made during the Nov. 25 hurricane. Westhampton Beach on Long Island put in a call for assistance. Within an hour heavy earth moving equipment was at work closing the 125-ft channel cut through the village by storm lashed waters of the Atlantic. Working day and night, 60 men closed the breach in the barrier beach by the morning of Nov. 26. The operation was carried out on lines of action set up by the civil defense set-up of the New York Department of Public Works.



SURROUNDED—Steel web of scaffolding encircles dome of the Mother Church, Christian Scientist, Boston, during a re-roofing job costing about $350,000. New steel framework and tile roof covering were installed.

Union help—AFL Allied Building Trades Council of Rochester, N. Y., has agreed to supply 700 men, in 70 teams, for rescue work in the event of an enemy attack.

Canadian guide—Standardization of civil defense programs all over Canada is in prospect with the release of a booklet on the subject.

Lost bay bridge steel found by magnetometer

Air search for the barge of sunken steel lost during windstorms in Chesapeake Bay has recovered the pilings for the Frederick Snare Corp., of New York. The steel was for deep-water piers of the Chesapeake Bay bridge. (ENR Dec. 14, p. 30)

A magnetometer was used in air search by the U. S. Coast and Geodetic Survey. The elaborate equipment found the steel under 30 ft of water about six miles northeast of the bridge site.

Other recent developments on the Chesapeake Bay bridge include:

1. Announcement by the J. E. Greiner Co., consulting engineers for the job, that repairing and replacing damaged parts of the bridge, which was hurt from the buffetting of floating equipment while still under construction, will cost $243,000.

No estimate of damage to floating equipment has been made.

2. Estimates by the J. E. Greiner Co. that administration, maintenance and operation of the bay bridge, along with the Susquehanna, and Potomac River bridges will cost $570,000 a year.

Administrative costs alone on the three bridges are set at $100,000, with $43,700 provided for salaries. Of this $12,000 a year would go for a consulting engineer who would inspect the projects, appraise their condition and suggest needed repairs.

NPA names Frank Creedon for construction office

National Production Authority last week moved to speed industrial expansion for defense, with Frank R. Creedon to head its newly-announced Facilities and Construction Bureau.

Creedon, former Federal Housing Expediter, has been in charge of numerous federal construction programs, including World War II ordnance plants and synthetic rubber plants. With private firms he administered atomic-energy construction at Oak Ridge, Tennessee and Hanford, Washington. He joined the National Production Authority staff in November (ENR Nov. 9, p. 24). Creedon was named Assistant Administrator of NPA in charge of its new bureau. He has set up these divisions:

1. Industrial expansion—specifically charged with expediting construction of new plants.

2. Tax amortizaton—for recommending certificates of necessity for tax benefits where new construction is for defense production. (This is the particular work Creedon had been handling since his NPA appointment. The new appointment enlarges his responsibilities.)

3. Loan—for authorizations for RFC loans to help expand production.

4. Building materials—under Director John L. Haynes, who has been handling this job for the last three months, for production and distribution of materials for defense building.

5. Construction controls — under Acting Director James W. Follin, this division will handle NPA controls and other activities for construction.

Traffic study prepared for metropolitan Chicago

A six-year comprehensive survey of metropolitan Chicago's traffic problems is in preparation. The study is expected to determine the city's future street pattern and create a master traffic plan.

Cost of the survey is put at $400,000 to $1,000,000. It will be jointly sponsored by business, industrial and civic groups as well as the city, county, state and federal governments.

The federal government will match state and city contributions. City funds are expected to come from contributions made by businessmen and industry.

Colorado power needs to rise 153% by 1970

FPC projects 1970 power needs to 38.5 billion kw-hours, up 153% over 1948; equipment for 5 million kw is needed

Energy requirements of electric utilities in the lower Colorado River basin are expected to reach 38.5 billion kwhr in 1970. This constitutes a 153% energy demand increase over 1948. Estimates were made in a new Federal Power Commission market survey of the basin.

To supply these estimated loads as they develop and to make up for the retirement of existing facilities, utility companies in the area will probably have to install five million or more kw of generating equipment.

The report indicates a demand growth of 7.5 million kw over the next twenty years. This release, together with an earlier study of the upper basin of the Colorado, completes the market coverage of this vital area which includes all of Arizona and southern portions of California and Nevada.

The great increase ahead, FPC reports, will be in the residential load. The region's population in 1940 was about 4.3 million. It is expected to reach 9 million by 1970. The 1948 residential use of 2.4 million kwhr is therefore projected to 10.4 billion kwhr over the next 20 years.

Industrial sales are expected to rise from 5.1 billion kwhr (1948) to 11.1 billion in 1970.

Rural requirements are expected to increase from 191 million to 453 million kwhr in 1970. The estimate is based on an anticipated increase of around 12,900 farms during the period 1948 to 1970.

Commercial use of power is expected to increase from 2 billion to 5.3 billion kwhr.

Fuel electric plants may have to supply a large amount of the new generating capacity to be installed, the report states.

The 1948 base had an installed generating capacity of 3.25 million kw of which 1.87 million was hydroelectric, 1.28 million steam electric and the balance of 100,000, internal combustion.

J. C. Bumstead leaves ENR; Joins Ohio Valley Agency

John C. Bumstead, associate editor, has resigned from ENGINEERING NEWS RECORD to become assistant director of the Ohio River Valley Water Sanitation Commission, at Cincinnati, Ohio.

A graduate of Rensselaer Polytechnic Institute, Mr. Bumstead is a former lieutenant-colonel in the Army Sanitary Corps. During his four years on the staff of ENR, he has specialized in reporting new developments both in water treatment and water disposal.

In 1943 the Army assigned Mr. Bumstead to a 3-year tour of duty in the Rio Doce Valley in Brazil as chief engineer of an inter-American sanitation unit. There he built water supply, sewage, and hospital facilities and aided in the promotion of an educational public health campaign to insure maximum labor production from iron and mica mine operations. Prior to his army experiences Mr. Bumstead was an assistant field engineer on the staff of the Tenessee Valley Authority, and assisted in the design of sanitary facilities for Andrews Field, Md., and the flying school at Walnut Ridge, Ark. From 1935 to 1941 he was assistant city engineer of Saratoga Springs, N. Y.

TRAFFIC STOPPER—A thousand-ton landslide blocked traffic recently for two days on California's heavily-traveled state highway No. 24 near Walnut Creek. Loosened by unprecedented winter rains, the slide forced the stream of commuter traffic between the Walnut Creek area and Oakland to detour over steep, winding back roads.

Scott charges contractors interfere with Commission

Governor Kerr Scott of North Carolina has offered to "sit down and talk it over" with state contractors who objected to his "contractor monopoly" charge made against road construction men late last month.

At the same time the governor criticized state contractors for their objections to new specifications on primary highways, and charged them with interference and trying "to run the State Highway Commission."

The governor made his statements in a letter to Robert Patten, managing director of the Carolinas Branch, the Associated General Contractors of America. Patten had wired protest to his monopoly charge.

"As I have said before," Scott wrote, "the road contractors are doing a good job building roads, but they must remember that it is their job to build roads and not to try to run the State Highway Commission."

GSA names consultants for dispersal planning

Four consultants were appointed last week (Dec. 20) to advise the federal government on problems connected with dispersal of essential functions to points outside Washington. Jess Larson, administrator of general services, said that other advisers may be added, but he wants to keep the number small—work effectively as a group.

Those named so far are: Abel Wolman, professor of sanitary engineering, Johns Hopkins University; Frederick P. Clark, planning director of the Regional Plan Association of New York; Clarence S. Stein, architect and city planner of New York; and Louis Justement, architect of Washington, D. C.

The consultants will meet at intervals to advise the staff of GSA and cooperating agencies on dispersal plans, particularly on the relationship of the proposed offices to the development of the surrounding metropolitan area. GSA will work closely with the National Capital Park and Planning Commission and with the planning and governmental agencies of the affected localities and the states of Maryland and Virginia to integrate the dispersed employment centers with sound development of the expanding suburban areas.

"Dispersal is not just an emergency plan," Mr. Larson said. "It is a plan for the permanent relocation of essential government facilities both in the interest of security and of the long-range efficiency and economy of government operations at the nation's capital."

St. Lawrence seaway referred to Congress

Federal Power Commission asks both power and seaway action—New York plan rejected

St. Lawrence power development has been referred to Congress with a new recommendation for federal construction of the seaway and power project "at the earliest possible date."

The new St. Lawrence appeal came as the Federal Power Commission rejected the application of the Power Authority of the State of New York to develop power on the American side of the river. The Commission decision to reject the New York application and recommend federal action was made Dec. 19 on a 3-1 vote, with commissioner Nelson Lee Smith dissenting. Smith urged licensing the state body, while Chairman Mon C. Wallgren and Commissioners Thomas C. Buchanan and Harrington Wimberley sided with federal development. Commissioner Claude L. Draper did not participate in the decision.

The FPC opinion declared that "the critical situation now facing the world calls for immediate commencement."

• **New York interested in power**—Noting that the New York Power Authority application covered only the power project, the commission held that state power development would delay action on the seaway.

"The vitally important seaway," the opinion said, "would still await action by Congress if the power development here proposed should actually be constructed, and it appears to us, on the basis of the national aspects of the power development, combined with the national and international benefits to be obtained from the seaway, that it is highly desirable for Congress to pass upon the proposal in its entirety rather than on a piecemeal basis."

• **Considered large area**—The majority opinion said that "consideration should also be given to the relationship between the marketing of power from the St. Lawrence project and the additional power potentialities of the Niagara River in the west and the undeveloped water power of the New England States to the East." State development, it was argued, "might not make this power available to as large an area as should be considered . . ."

Legal status of the New York state agency also was challenged, as the Commission warned that litigation might delay construction by the power authority "indefinitely" even if the federal license were granted.

In his dissent, Commissioner Smith agreed that development of the St. Lawrence was urgently needed, but he contended that licensing the state authority would speed the project.

Dependable capacity of the proposed U. S. St. Lawrence power project was estimated at 700,000 kw, with some 570,000 kw available continuously and an average annual energy output of 6.3 billion kw hr. At-site cost was calculated to be 1.72 mills per kwhr.

Natural rubber supply goes under U. S. control

The government last week took over all buying and selling of natural rubber.

The General Services Administration, at the direction of the National Production Authority, becomes the sole importer of all crude natural rubber and natural rubber latex into the U. S., its territories and possessions.

By the same direction, GSA also acts as the government distributing agency, meeting stockpile requirements and, on the basis of NPA allocations, reselling rubber to industry.

The exclusive rubber buying program was announced simultaneously by NPA Administrator William H. Harrison and Jess Larson, administrator of General Services.

Rubber thus becomes the first product to be exclusively purchased and distributed under Section 303-a of the Defense Production Act of 1950, which authorizes the purchase of metals, minerals and other raw materials by the government for government use or resale.

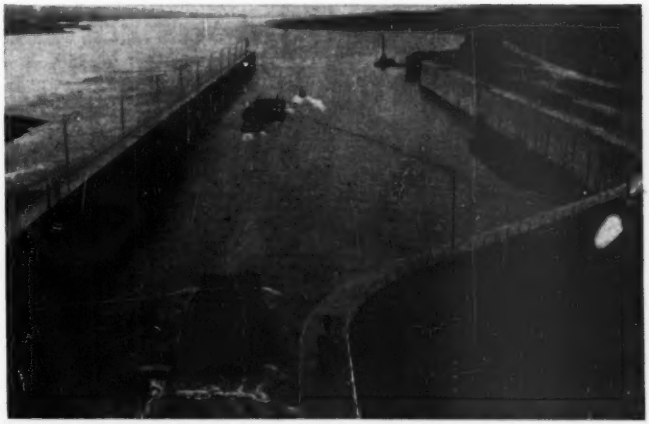
New floods work damage to West for second time

California, still wet from late November floods (ENR, Nov. 30, p. 25), took another soaking early in December. Total estimated damage for the two storms now is $33,000,000. Further damage in the city of Reno brought Nevada's total to $4,000,000.

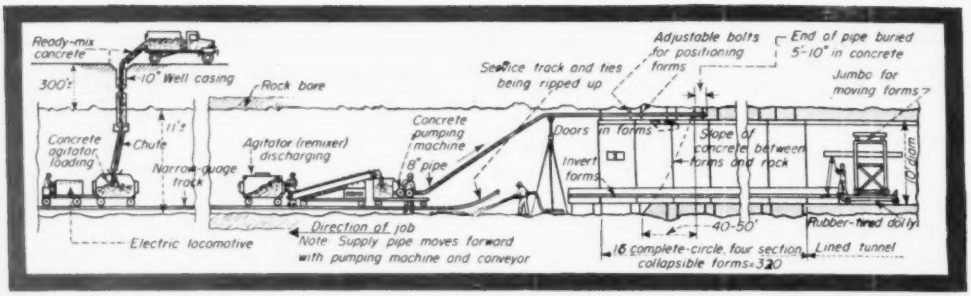
Damage caused by the most recent rains was centered closer to the outlet of the San Joaquin and Sacramento Rivers into San Francisco Bay. In the delta area the San Joaquin broke through its levees in many places, inundating suburban homes, farm lands, highways and rail lines. Highway 50, one of the major cross-state arterics, was under 17 ft of water at one place. Of the total damage in the state about $3,000,000 is for highways and country roads.

• **Flood control asked**—Total damage at Pine Flat Dam, Corps of Engineers project on the Kings River, was set at $700,000. At Isabella Dam on the Kern River, another corps job just getting under way, stocks of aggregate were washed away, while at the Folsom damsite there was only a washout on an access road. The Bureau of Reclamation reported considerable damage to canal banks that were under construction.

But the storms left more than silted homes and washed out roads and levees. Shouts could be heard up and down the Central Valley placing blame for unfinished flood control works and asking for speed-ups in appropriations. The $33,000,000 damage figure gave them a springboard.

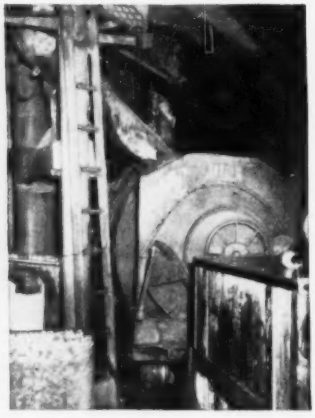


MCNARY LOCK PUT INTO SERVICE—The navigation lock at McNary Dam on the upper Columbia River became the first operating feature of the power and navigation development. It eliminates the Umatilla Rapids. Use of the lock was made possible by raising the river level during diversion (ENR, Dec. 14, p. 31). Eventually the single-lift lock will be the highest in the world—with a maximum lift of 92 ft. It is 86 ft. wide and 675 ft. long.

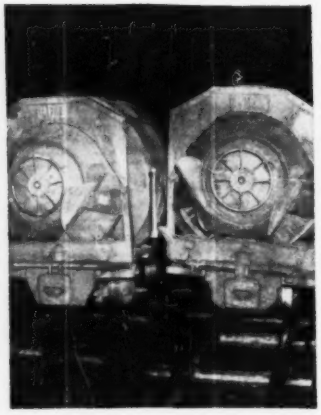


POURING TUNNEL LINING in a single operation requires synchronization of clean up, concrete delivery, handling and placing and form setting.

READY-MIX CONCRETE, weighed by an inspector, is dumped into a 10-in. well.



DROPPING to the tunnel, it's chuted into agitators for transport to forms.



EMPTY and full agitators pass on a bypass. Electric locomotives pull them.

Full circle, continuous concreting preserves tunnel's rock bore

LINING A TUNNEL in a single operation is uncommon practice. But it's being done on Baltimore's Patapsco River water-supply project: Full-circle 10-ft dia concrete lining is going in at the rate of more than 1,700 ft per week.

On a three-shift-per-day, five-day-a-week schedule, 166 men working for Samuel R. Rosoff, Ltd. under M. L. MacLean, chief engineer and J. F. Holden, general superintendent, are driving the 7.3-mile job forward at this unusual pace. They're getting results by a smooth, well-timed meshing of all construction operations: Tunnel cleaning, form setting, concrete delivery, handling and placement, and curing. Equipment is repaired and cleaned during week-end shutdowns.

• **Clean up**—Loose rock and debris, left from driving the tunnel, were bulldozed to a mucking machine, loaded in narrow-gage cars and hauled to the main-shaft elevator, wasted at the top of the shaft.

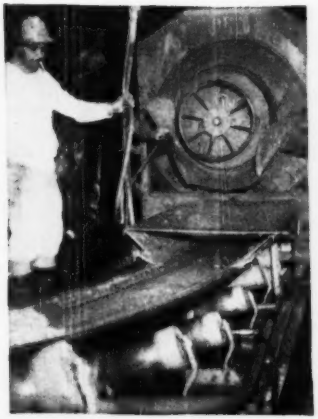
Muck and rock dust were washed down from the bare-rock bore with a mixture of air and water. The bottom of the tunnel is hosed out just ahead of form setting.

• **Tubular forms**—Continuous full-circle pouring is made possible by specially built collapsible cylinder-like forms. Form sections are 20 ft long and are in four sections—an invert and a three-part pin-hinged upper section. They're made of sheet metal on ring girders separated by short longitudinal struts. Each form has six ports that permit inspecting of concrete placement. Invert sections carry narrow-gage tracks.

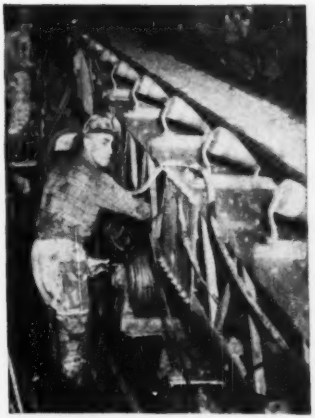
Forms are centered in the tunnel by adjustable bolts. These bolts, around the circumference, extend out from the skin to contact firm rock. Each form has numerous holes for insertion of bolts and grout pipes. Holes are closed off by a yoke and bolt with an insert plate at the end.

Forms are continuously moved ahead inside the pouring section of 16 forms, an overall length of 320 ft. One complete form section is carried on a narrow-gage air-motor-and-chain-drive jumbo. The jumbo has a cantilever arm in front with a chain fall. The invert is raised by the chain fall and left in this position for moving.

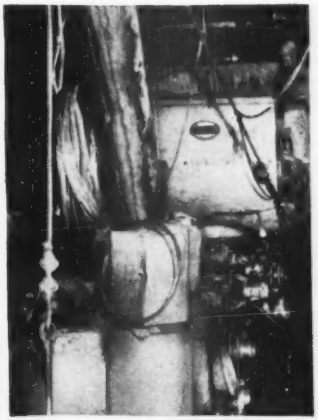
The last invert form is picked up



ROTATED by compressed-air motors, agitators discharge directly onto a conveyor.



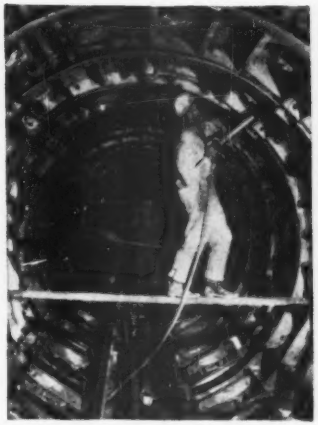
CONCRETE with a 4-5-in. slump and one-inch aggregate rises to the . . .



HOPPER of a pumping machine. The plunger-pump forces fluid concrete . . .

THROUGH a supply pipe above cleaning and forming to top of tube-like steel forms.

FROM the buried supply pipe, concrete flows downward on each side of the form.



ITS FLOW and compaction is encouraged by air hammers held against the forms.

with the jumbo riding on a rubber-tired, bent-axle dolly. That makes possible carrying the invert in front of the jumbo. When the invert is raised, the dolly, with jumbo, is pushed forward to the next full-circle form. Jumbo and invert are then pushed off the dolly into the in-place forms.

Once inside the tube forms, the jumbo is positioned to collapse the upper form. This is done by manually operated jacks in the top of the jumbo and ratchet jacks at the sides. Jacks lower and pull in the form so that it will pass inside the full-circle section. One pin is taken out of each hinge to permit collapsing.

Collapsed forms are then pushed through the long in-place forms. At the unpoured end, the upper form is raised and expanded by jacks and pinned to an already set invert. The invert is lowered ahead of this complete section and positioned by adjustable bolts. It is then ready to receive an upper form.

By bringing invert and upper forms ahead as the concrete sets up, form setting keeps ahead of concreting.

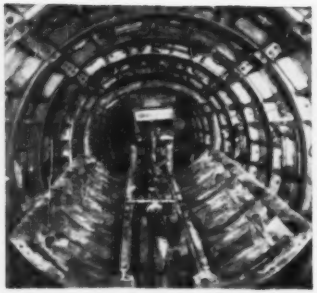
The forms are the property of the Blaw Knox Co. They are rented out for this job.

• **Pouring it in**—Ready-mix concrete is trucked to the job site from the Arundel Brooks Concrete Corp. plant—weighed enroute by a city inspector. The contract for concrete is on a cubic-yard basis but each truck is fitted to carry four cubic yards at a known weight. Weights are recorded on receiving slips by inspectors.

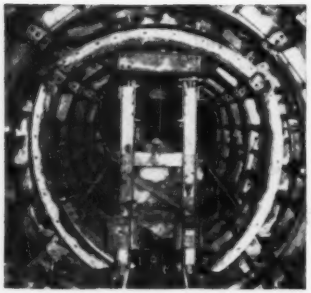
Trucks discharge into a hopper of a 10-in. well casing. The concrete then drops 300 ft to the tunnel. Here it is chuted into agitators for re-mixing and transit to the pouring machine. Running on narrow-gage track, agitators are rotated at standstill points by compressed-air motors.

Agitators are pulled by small electric locomotives. Near the pouring machine, the locomotives are switched to push agitators to a conveyor belt. Switches on the track provide for passage of loaded and empty agitators. Six agitators are in use; two are available as spares.

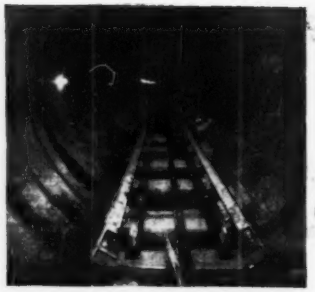
Agitators discharge fluid concrete (4-5-in. slump) onto the conveyor which empties into the hopper of a pumping machine. The pump forces the concrete through an 8-in. steel pipe that extends above forming-and-cleaning operations and along the top



FRONT—Invert goes through circle form on jumbo with cantilever and chain fall.



REAR—Three-section hinged form, collapsed by manual jacks, carried on jumbo.



A RUBBER-TIRED DOLLY carries the jumbo with invert to the full-circle form.

of the tube forms. The end of the pipe is buried 5 to 10 ft in the plastic concrete. As concrete is deposited, the supply pipe is pulled forward with the pumping machine.

The supply pipe is supported on tripods with rollers at the top, as well as the top of the forms. The pipe slides between grout pipes that extend outward from the top of the form, 15 ft apart. Pipes alternate on each side of the form's centerline.

Grout pipes, 10-12 in. long, do not extend to the rock. Later the concrete lining is drilled out through the pipes to permit grouting of the arch. Other grout holes are placed at wet ground and steel-supported areas at pre-determined locations.

Compaction of concrete in the annular space between the tunnel wall and form is aided by vibration. This is done by laborers holding air hammers against the inside of the forms. Vibration is, however minimized: it's used only just enough to maintain a slope of concrete in 40-50 ft on each side of the forms.

On weekend shutdowns, a sand-bag bulkhead about 5 ft high is placed between rock wall and forms. This reduces length of slope to about 25 ft. Bulkhead is removed when concrete pumping is resumed.

The concrete is specified to have a strength of 3,000 psi at 28 days. It has one-inch maximum aggregate and contains one ounce of Vinsol resin (air-entrainment) per cubic yard to get increased workability. Standard strength cement is used in the mix.

Price per cubic yard of concrete in place under this contract is $29.20. The tunnel lining thus far has required about 1.7 cy of concrete per lineal foot.

• **Panning off seepage**—Water seeping into the tunnel must be kept from the wet concrete to prevent it from being washed out. This is done by covering leakage and seepage sections with black sheet iron, cinch-anchored to the rock. Keeping the water from the fresh concrete, the sheets convey it down to 2 or 3 in. pipes that connect with a 6-in. underdrain. The underdrain is encased in the concrete lining and later it is pressure-grouted.

• **Officials**—The Patapsco project is under the Bureau of Water Supply. Leon Small is water engineer and B. L. Werner is engineer in charge. Shift engineers on the tunnel are: H. I. Mettee, J. I. Kelly and G. A. Morris.

Dam higher than Hoover Dam proposed for Kosi River in India

Construction of a dam 750 ft high, or about 20 ft higher than Hoover Dam, is under study by the Central Waterways, Irrigation and Navigation Commission of India as the key structure in a vast irrigation, power and flood control project for the valley of the Kosi River in northern India. The Kosi is a tributary of the Ganges River that rises in the Himalayan Range, and flows south across the plains of the states of Nepal and Bihar.

According to A. N. Khosla, chairman of the commission, the current studies will be completed next March, at which time the financing will be undertaken.

Construction of the great dam to form a storage reservoir in the Chatra Gorge near the headwaters of the Kosi River will be in the third stage.

Stage I will consist of construction of a diversion dam in the state of Nepal some distance below the point where the Kosi River debouches on the plains. This dam will provide water to irrigate 1.2 million acres of land, will provide some flood control and will make possible the generation of 30,000 kw of power. Preliminaries to the construction of the main dam will be started as part of Stage I, including a railway and power line to the main dam. This stage is expected to cost 180 million rupees ($40,000,000).

Stage II will increase the irrigated areas to 2.16 million acres and will add 90,000 kw of power, at a cost of 140 million rupees.

Construction of the 750-ft high dam at a cost of 550 million rupees will be undertaken as Stage III. It will provide for a gross storage of 10.6 million acre-feet of water, of which the lower 2.4 million acre-feet will be dead storage for sand and silt. The intermediate 6.0 million acre-feet will be for irrigation, power and navigation, and the upper 2.0 million acre-feet will be for flood control. Reservoir losses are estimated at 0.2 million acre-feet.

It is planned to operate the gates of the dam in such a way as to trap as little silt as possible in the reservoir to aid soil build-up.

Construction of a second diversion dam near the Nepal-Bihar border is included as part of the irrigation works. It will serve two canals on the right bank and one on the left.

These canals will be designed to carry silt as well as irrigation water.

The canals will be carried over several natural streams, thus permitting those streams to be used for drainage.

Each of the diversion dams is to be provided with a navigation lock. The dams also will be used to carry highways and possibly railway lines over the river.

Installation of from 930,000 to 1,400,000 kw of generating equipment in the main dam is proposed, depending on what the current studies reveal concerning the flow of the river.

90-ton pedestal piles for iron-titanium plant

Thornton E. Smith
Fraser, Grace & Company
New York City

A NEW TITANIUM and iron ore-treatment-plant on the St. Lawrence River at St. Joseph de Sorel, Quebec, will be founded on more than 1,500 concrete bearing piles—each carrying 90 tons to a deep sand layer through a layer of unconsolidated marine clay. Load tests on the Franki pile used have shown that negligible settlement can be expected under the extra heavy loads of the plant.

A 200-ton load on a single 21-ft test pile caused a gross settlement of only 0.146 in. and a net settlement of 0.034 in. The load test lasted 11 days; the 200-ton load was applied during the last two days. A load of 100 tons had caused gross settlement of only 0.053 in.; net, 0.007 in.

(Under the recently adopted New York City Building Code, a pile with only one-half the design load of these piles would be permitted under a 90-ton test load, a gross settlement of 1 in. and a net settlement of 0.90 in.)

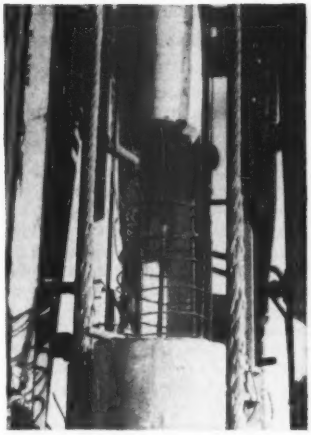
• **Heavy design loads**—The treatment furnaces and the cranes to serve them, combined with the wide-span layout of the building, made rugged foundations a necessity. Each of the five 3,000-ton furnaces covers an area 54x23 ft so that the unit load is 4,840 psf.

Layout of the furnaces required that the interior columns of the steel-framed building be spaced between furnaces on 80-ft centers. This condition concentrates large loads and moments at the column bases.

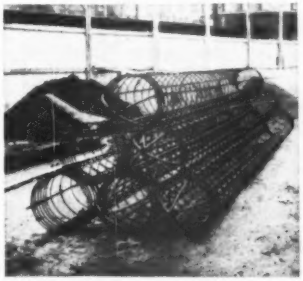
Also, two 75-ton, 4-girder cranes span 60 ft and travel the length of the building in front of the furnaces. At the furnace side of the crane, the runway columns are 80 ft on centers and so are spotted on the same foundations as the building columns. On the opposite end, both building and crane runway columns are spaced at 40-ft centers, but foundations had to be designed to carry a future extension which will contain two 100-ton cranes. Thus, the column bases in both rows must support vertical loads of 1,500 tons each—in addition to large moments.

• **Clay complicates conditions**—The surface of the site is covered with a layer of fine brown sand several feet deep, under which lies a layer of gray, silty sand containing some clay.

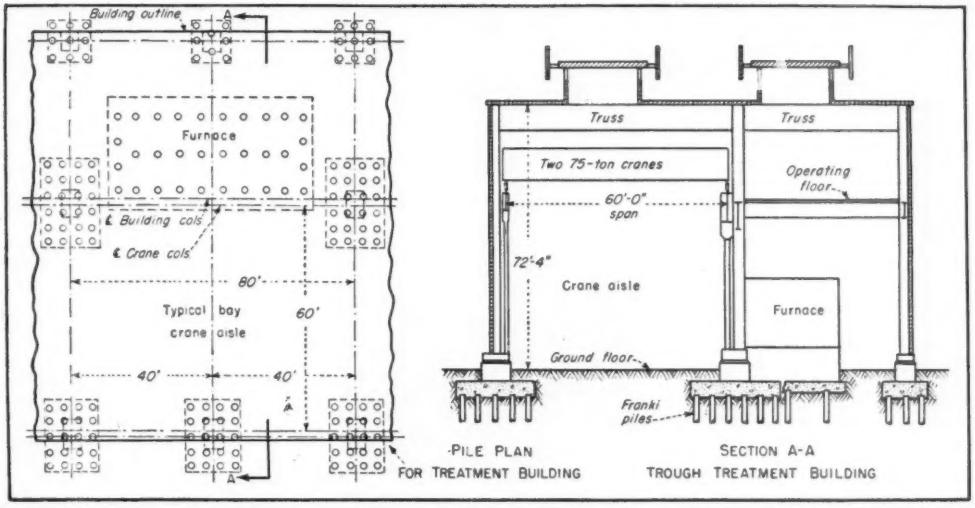
Under these two layers is a stratum



HAMMER drops inside casing—also inside spiral reinforcing—directly on concrete plug. Cables extract casing.



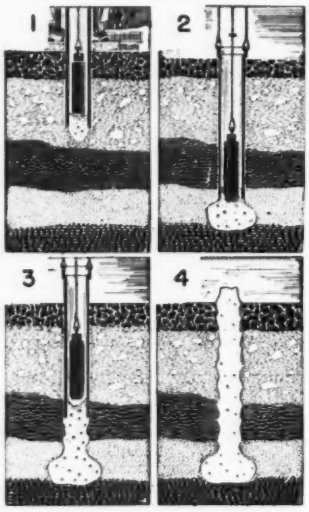
REINFORCING CAGES have bars bent in at bottom to take blows of hammer.



PILES must take weight of combined footings that carry both building and crane columns near center of building. Furnace foundations are also on piles—loads are heavy. Columns support vertical loads up to 1,500 tons each and large moments.

How piles are driven

Pedestal piles used on the job are Franki piles, made in the four steps pictured above. A 4-cu ft plug of low-moisture concrete is put under the drop hammer inside a 19-in. dia steel casing. Blows of the hammer force the compacted concrete downward, pulling the casing with it (1). When a solid stratum is reached, the casing is anchored to the driving frame, and about 20 cu ft of concrete is hammered down through it to form a bulb or pedestal (2). Then the pile is formed as casing is withdrawn 10 in. at a time and successive ½-cu yd batches of concrete are hammered out through it, against the surrounding soil (3). The completed pile (4) is a rough concrete column with an enlarged base, encased in a sheath of tightly compacted earth. A 20-ft pile can be placed in under 2 hours.



of grey, silty, marine clay starting at a depth of 5 to 10 ft below the bottom of the pile caps. This fluid clay layer varies in thickness from less than 1 ft to more than 5 ft—and in some places is completely absent. Its water content, which varied in tests from 40 to 50% of dry weight, was always well above the liquid limit. Consolidation tests showed a high compressibility; preconsolidation pressure was only 0.7 to 0.85 tons per sq ft—slightly above the overburden pressure.

The unconfined compressive strength of the clay ranged from 3.2 to 7.0 psi when undisturbed; after remolding, however, the clay was too soft for the test to be performed. Further evidence of its high sensitivity to disturbance was obtained during excavation, when only slight displacement was necessary to turn it into "soup."

Below the clay, a brown or grey sand layer extends to a depth of 70 to 90 ft from the surface. This layer includes coarse, medium and fine sands, often combined with silt. Percussion tests indicated a "medium hard" layer at the top of this formation and a "softer" layer at greater depth.

This sand layer is followed by another layer of clay, similar to that above but of undetermined thickness. Three borings were continued to a depth of 235 ft, but none reached bedrock.

• **Piling through clay**—Had it not been for the presence of the clay stratum near the surface, serious consideration would have been given to carrying both the treatment furnaces and the heavy columns on spread footings. But the high water content of the clay, would have led to consolidation under these loadings as the moisture was expelled—with settlement as the inevitable result. Furthermore, the varying thickness of the clay stratum might well have led to large differential settlements, which would have been even more serious.

It became obvious that piling would be required to carry the loads through the clay to the firmer ground beneath.

Even this firmer soil, however, was incapable of resisting the high point-bearing stresses of timber piles and most types of concrete piles. And skin-friction piles would compress the clay layer and be subject to settling—just as would spread footings.

EXHUMED PILE shows secondary base used for added bearing on hard stratum when main base rests on low bearing soil.

• **Franki pile chosen**—The Franki pile was chosen as able to develop most of its resistance to the load through bearing on the lower sand layer, since its enlarged base greatly reduces the point-bearing stresses. Pile lengths varied from 14 to 26 ft, but most measured 20 ft.

Construction and driving technique for the Franki pile is shown in the accompanying diagrams. Contrary to the usual pile driving practice, the hammer blows are not struck on the top of the steel casing but upon the concrete plug in the bottom of the casing. The casing is thus pulled through the ground, not pushed.

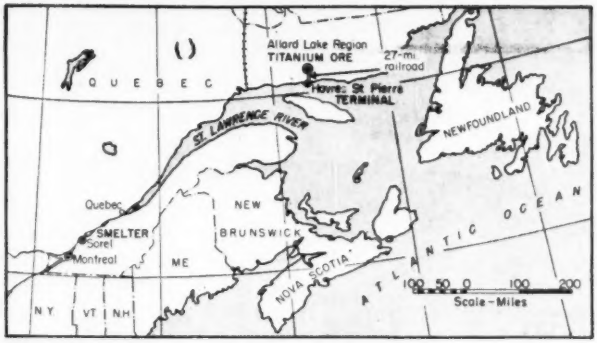
Concrete used had a water-cement ratio of 0.6 by volume, or 4.5 gal per bag (U. S. measure). The mix was 1:2:4; slump was zero; compressive strength was well over 6,000 psi. The low water-cement ratio, low slump, and pounding of each batch as it was placed gave ample assurance that there would be no "waisting" of the piles as they passed through the soft clay layer.

The casing has an inside diameter of 19 in., but expansion caused by pounding the concrete gives the pile a diameter of at least 20 in. For the 90-ton design load, the compressive stress in the pile is only 575 psi—and even less in the enlarged pedestal.

• **Penetration tests**—To combat the possibility of injuring piles already driven, a minimum center-to-center distance of 4 ft 6 in. was maintained. No time-delay between the driving of adjacent piles was required.

When the casing reached the required depth, the contractor performed a penetration test by delivering 10 blows of the hammer with a drop of 3 ft. For these 10 blows, specifications called for a maximum penetration of 1¼ in.; the actual penetration averaged less than ⅝ in.

For those piles where the penetration was from 1 to 1¼ in., a secondary bulb was formed at a depth of about 15 ft below the pile tops. Containing 10 cu ft of concrete, this bulb was located so as to rest on top of the medium hard sand layer, which percussion tests had located at this depth. Thus, the secondary bulb gave added bearing on a hard stratum for piles where bases were resting on sand of less than average firmness. About



Ore for Sorel— Its source, transport and treatment

Construction of the plant at Sorel has resulted from discovery of over 125 million tons of ilmenite ore (a mixture of iron and titanium oxides) in the Allard Lake region of northeastern Quebec,—at Lake Tio (for titanium oxide). This discovery—containing 35% titanium dioxide and 40% iron—is the world' largest and could supply the world with titanium oxide for 100 years at the 1948 rate of use.

A 27-mi railroad has been built from the small St. Lawrence River port of Havre St. Pierre to the mines—located on a wooded, lake-studded plateau formerly accessible only by air. The railroad goes through a 700-ft tunnel, crosses 12 miles of muskeg and two rivers.

Ore will be mined at the rate of 3,000tons a day for the seven warm months of the year during which the mine will be operated and the St. Lawrence open for shipping. Ore will go through a preliminary crushing operation and will be loaded into 10,000-ton capacity ships at Havre St. Pierre. At Sorel the ore will be taken from the ships by a tower unloader and carried to stockpile by belt convevor.

Subsequently, ore will be picked up by a reclaiming crane and belt-conveyed to dryers, then crushed, carefully weighed and mixed with coal, and fed into five electric arc furnaces. These are stationary furnaces with six electrodes in line and will be largest of the sprung-roof type ever constructed. They will be in continuous operation all year, and each will treat 300 tons of ore a day.

The melting steel will be removed in a large ladle, refined in one of two tilting electric arc furnaces, and cast in ingots. Titanium-oxide slag overflows from the ladle to a slag pot, is cast into small blocks and crushed before shipment.

Full production should be reached at the plant by the summer of 1952. Its products then will be 250,000 tons per year of slag, containing more than 70% titanium dioxide, and 200,000 tons per year of high grade melting steel.

Titanium slag output of the plant will initially be shipped to four or five paint producers in the United States. Further processing will yield titanium dioxide—used as a white pigment—in paints. It is expected that melting steel output will be sold to Canadian steel producers.

The Sorel plant was designed by Fraser, Brace & Company, of New York, in cooperation with a technical group from the New Jersey Zinc Company. Fraser, Brace & Company also designed the Havre St. Pierre Terminal. Construction of the entire development is being carried out by Fraser-Brace Engineering Company, Montreal. The Quebec Iron & Titanium Corporation, jointly owned by the Kennecott Copper Corporation and the New Jersey Zinc Company, will operate the mines and treatment plant.

16% of the piles required these secondary bulbs.

• **Reinforcement of piles**—Reinforcing steel was used in piles where small vertical column loadings were combined with large bending moments. In these footings the outside piles, which resist the moment, were reinforced. These amounted to 6% of the total number driven.

Pile reinforcement consists of four ¾-in. dia or six ⅝-in. dia bars tack welded to a ¼-in. dia spiral bar. Normal pitch for the spiral is 10 in., decreasing to 3 in. in the top 3 ft. This cage fits inside the casing, around the hammer, and extends 30 in. into the pile cap. At its bottom the bars were bent in towards the center. The cage was anchored in the concrete 6 in. beneath the top of the pedestal by several 6 to 8 ft blows of the hammer.

Where a secondary bulb and steel reinforcing were combined in one pile, the reinforcing cage was anchored in the secondary bulb and not extended below it. Had the bars passed through the bulb, they would have been spread and damaged by excessive pounding during the formation of the bulb.

The Franki Compressed Pile Co. of Canada, subcontractor on the project, completed the driving job in 4½ months. Two driving rigs were used throughout the job, with a third added during one month of operation.

Fraser-Brace Engineering Co., of Montreal, is constructing the treatment plant and all other components of the development (see left).

Sulphite liquor used as fuel

Waste sulphite liquor—labeled the No. 1 pollution problem in Wisconsin—can be successfully burned in a commercial power plant.

Demonstrations by the Kimberly-Clark Corp. have established that sulphite can be burned as a fuel. Engineers in charge of the demonstration which took place at Niagara, Wis., said that the cost of using the waste as fuel is about double that of low grade boiler coal. They are confident, however, that the costs can be lowered and efficiency improved.

Big cost is concentrating the sulphite waste so it can be used as a coal substitute. At present the evaporators for this task would cost each company adopting the idea a cool $500,000.

Most of the paper mills in Wisconsin use the sulphite process in making their product, the discharge polluting rivers and streams and lakes, especially the lower Fox River and Green Bay, heart of the state's paper industry.

While not toxic, sulphite "stinks up" a river and robs streams of oxygen supporting marine life. A stream overloaded with sulphite and other wastes becomes useless for recreation or for farmers to use for livestock.

Other proposed solutions involve turning the sulphite into yeast, a high protein food for livestock and poultry, and through chemical processes making it into a sticky road binder and dust settler.

Metallurgy

Craftsmanship

Tolerance Control

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

Integrity

Product Uniformity

Field Service

Engineering Service

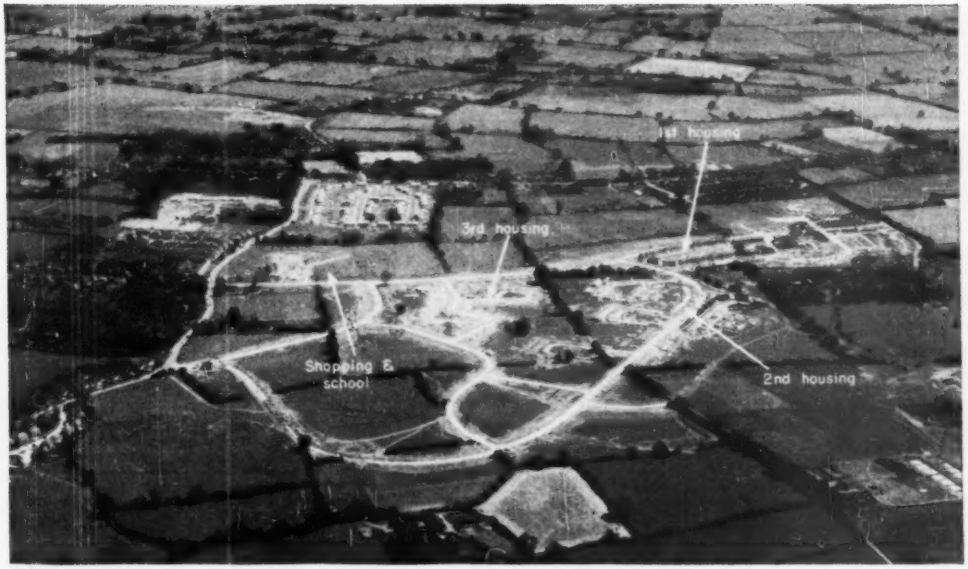
Surface Finish

make preference for a reason your guide when you specify ball and roller bearings

Over the years, products acquire a value above and beyond their mechanical qualities—a value proved by their *acceptance* throughout industry. This is especially true of SKF ball and roller bearings, preferred by all industry for one or more of eight good reasons. So when you specify, let preference be your guide. 7200

SKF
BALL AND ROLLER BEARINGS

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.
—manufacturers of **SKF** *and* HESS-BRIGHT *bearings.*



HERE'S HOW a new town looks when the planners get to work. This is the site of Hamel Hempstead, where development is planned.

What happened to the New Towns? —A report on a British experiment

Frederick R. Brewster
McGraw-Hill World News

IN ITS EFFORT to establish a dozen or so self sufficient "new towns," away from the congestion of present population centers, Britain's Labour Government appears to have bitten off more than it can chew.

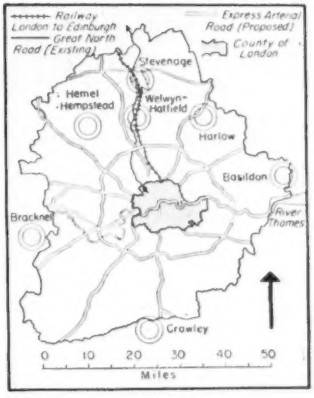
An impartial look at what has been done on the ambitious plan in the more than two years since it was inaugurated demonstrates one great truth:

Just as was the case with the National Health Service, the nation's resources are not equal to the demand when it is added on to all the other demands of the day.

• **The Dream**—The present New Towns program dates from the 1939 report of the Royal Commission on Distribution of the Industrial Population. This report stressed that "the continued drift of the industrial population to London . . . constitutes a social, economic and strategic problem that demands immediate attention."

To remedy the situation, the commission recommended a plan by which decentralization or dispersal should be encouraged and secured in the form of garden cities, satellite towns, "trading estates," or by the development of existing small towns or regional centers.

The war prevented immediate action, but in 1943 the government had established a Ministry of Town and Country Planning. Its first minister, W. S. Morrison, called for the preparation by Sir Patrick Abercrombie of a "Greater London Plan," which was published in 1944.



LOCATIONS of largest group of new towns were selected with an eye toward relieving ever-growing congestion of London.

This plan made detailed proposals for the regrouping of a million people in the Greater London area, with about three-quarters of a million encouraged to move out to new towns or expanded existing towns within a fifty-mile radius of London.

The Labour Government, which took office on August 15, 1945, set up a New Towns Committee in October of that year, and in 1946 a New Towns Act became law. The act provided that development corporations be set up for each designated area, with power to acquire properties, by compulsory purchase if need be. The act also provided that advances by the national treasury to the development corporations would be limited to a total of 50 million pounds, to cover the anticipated requirements of the first five years.

Total expenditure on a new town for 50,000 people was originally estimated at 19 million pounds, of which

15 million would be provided by the Development Corporation and 4 million by land taxes.

With this in view, 14 such towns were designated throughout England and Wales, to contain a total of 123,000 houses by the time they are completed, and to provide jobs for 100,000 workers in new factories to be erected in the towns.

• **The Facts**—It has always been admitted that this ambitious program was a long-term affair, probably to take 20 years to complete in most of the new towns.

But, despite the general admission that the program was well conceived and planned it hasn't produced results to date. The fourteen new towns are still pretty nebulous things, and any home-seeking worker who makes a visit to any one of the five that have made much progress beyond the drawing-board stage is likely to come away discouraged.

And evaluating the overall progress in the four years since the New Towns Act was passed he would find:

Although the new towns so far designated will require about 123,000 houses, by June 30 of this year only 365 houses had been built.

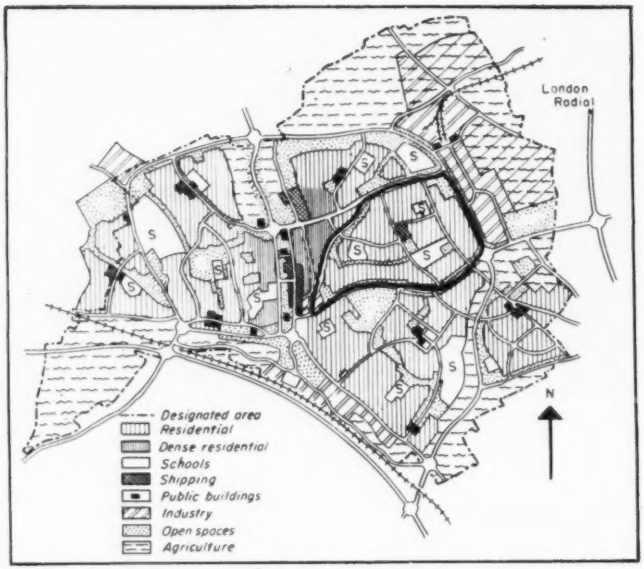
The towns, expected to provide 100,000 jobs, have thus far provided only 660.

Each new town will require some 3,000 to 4,000 building laborers during its peak construction period. But Hemel Hempstead, for example, now has only 300 men; Stevenage, 100; Harlow, 200; Welwyn and Hatfield, 100; and so on.

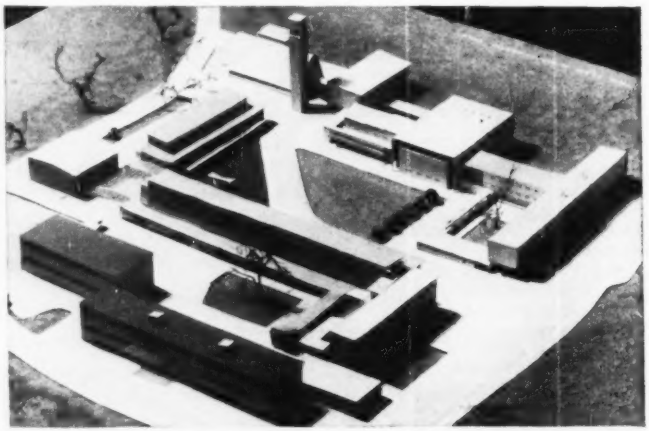
A town-by-town-look at the projects under way reveals the following:

• **Stevenage**—This is the first of the new towns to get under way. The existing village is in itself the nucleus of the first neighborhood of the new town. The plan is to add five other neighborhoods containing on an average 10,000 persons in each, each neighborhood to have its own local shops and schools and playgrounds. There will be houses and apartments of different types and sizes to suit different families, and gardens will vary in size for different tastes. There will be trees to punctuate the buildings, grass commons between houses. (ENR June 6, 1949, vol p 882)

Among the things that need to be done are improvements of highway communication, one of which is to replace the six bridges which now cross railroad tracks and are already inadequate and in bad condition. A new railway station and a central bus station will be needed and the Great North Road, a main highway from London, routed around the town.



HERE'S WHAT the planners plan, in detail. Outlined area corresponds to that in picture at left, open areas (S) are schools.



NEIGHBORHOOD UNITS in Hemel Hempstead will look like this model—with a central heating plant, plenty of air space.

Progress — Twenty-four houses completed, 300 more under construction. Roads and sewage treatment plant extension under way. Several factory expansions in progress. New secondary school completed, and health center already put under construction.

• **Crawley**—This is the farthest advanced of any of the new towns. Just over the county line into Sussex, about 30 miles south of London, it is designed chiefly for the relief of overcrowded conditions in the metropolis. Crawley is intended to have a population of 50,000.

The permanent water supply scheme for Crawley is linked with that of four other communities in northeast Sussex—and these have formed the Wier Wood Joint Water Board to carry out the project. This calls for construction of a reservoir of about 12 billion gallons capacity, from which Crawley will draw about 2mgd. Contract for construction of the dam has been let to Richard Costain, Ltd., for $1,161,000.

Surface drainage will involve con-

HOUSING for Hemel Hempsted includes these semi-detached, four bedroom structures, for larger families.

siderable realignment of streams running through the area—a program that may cost $1,500,000.

The Development Corporation here was the second to be established, February 26, 1947. The designated area contains approximately 5,290 acres centered on the small country town of Crawley and including the village of Ifield and Three Bridges and part of two other villages with a present population of about 10,000.

PROGRESS—Fifty houses completed, 317 more, plus 72 apartments, are under construction. More than half of the work of realigning water courses is completed and roads and sewers are in process for opening up of industrial sites. Contracts let for building a dam for a new water supply reservoir and for new sewage treatment plant. Five privately built factories are under construction.

• **Hemel Hempstead** – Twenty-five miles northwest of the center of London, it is designed to absorb some of London's excess population, but unlike Stevenage and Crawley, it had much less of a clean slate to write upon. In addition to the small Hertfordshire town from which the new town takes its name, there are a great many small villages scattered about the 5,910 acres of the area to be developed. Much incoherent development has gone on between and along the Bulbourne Valley. There were already about 22,000 people living in the area, a figure which the New Town is intended to increase to 60,000.

PROGRESS—347 houses under construction, contract for 218 more are let. Hostel for 300 building laborers completed. One new factory occupied. Because the town is to be built around steep-sided valleys, the problem of surface water drainage is a serious one. Disposal plans include a system of balancing tanks to regulate the flow of storm water. Sewage will be taken through trunk sewers to the Colne Valley plant at nearby Rickmansworth—due to be completed in 1953.

• **Harlow**—20 miles northeast of London, a new town of 60,000 is planned. The development calls for 756 new dwellings.

PROGRESS—102 houses under construction are completed. One new factory under construction.

• **Basildon**—30 miles east of London, a town of 50,000 persons.

PROGRESS—Master plan awaits approval. Site preparation in progress for both housing and factory estates.

• **Welwyn and Hatfield**—Originally conceived as a single new town of 60,000, and now to be separately developed, Welwyn will have a population of 36,500, and Hatfield 25,000.

PROGRESS—Master plan for Welwyn awaits approval. Plans ready for 156 houses, one block of 95 apartments under construction by a private builder. Hatfield: block of eight small workshops has been completed by private interests and work is about to start on 119 houses and 36 apartments.

• **Backnell**—A new town of 25,000; is planned only.

• **Aycliffe**—Of the new towns being built outside the Greater London area, the one farthest advanced is Newton Aycliffe, in County Durham, in northeast England.

This is a much smaller town than those discussed so far, its target-population is only 10,000 persons. Additionally, it was started from scratch—the site previously was wholly agricultural land, with no marked natural features.

PROGRESS — 146 houses and 18 apartments under construction. Forty-one aluminum prefabs completed and occupied by building workers. Main sewer system nearly completed and half of the main roads laid out and under construction.

• **Peterlee**—Also in County Durham, planned for a population of 30,000.

PROGRESS—Roads and sewers for first 100 houses completed. Plans for first 250 houses approved, but some delay in letting contracts.

• **Corby**—Target population is 40,000 for this steel workers town. The plans are in a very early stage; no corporation staff has yet been appointed.

• **East Kilbride**—This Scottish development, nine miles south of Glasgow for Clyde Valley shipworkers, has a target population of 45,000. Plans contemplate eventual construction of 12,000 homes, with four complete neighborhoods.

PROGRESS—300 houses completed, roads and sewers 80 percent completed.

• **Too Thin**—Basic reason for the apparent failure of the large and ambitious program is that it was launched without proper coordination with other sectors of the economy.

Critics of the slow pace point to the fact that only a small share of the new houses being built in Britain each year are allocated to the new towns. Out of the 200,000 houses a year fixed as the most Britain is capable of building this year and for the next two years, only 980 are scheduled for the new towns.

Further criticism comes from those who see that even the eight New Towns in the neighborhood of Greater London won't take up all or even half of the still-mounting excess population in the world's largest city.

The London County Council's waiting list for houses has nearly trebled since 1946 and is still growing. The county's population, just over four million in 1938, dropped to about 2,300,000 during the war, but by March of this year it was back to 3,411,000 and still going up.

Another obstacle is the government's present drive for growing industrial export to remedy the nation's trading position. This insistence has brought more and more industry to London, and less and less willingness by industry to locate in outlying areas.

Need a new Shovel? Crane? Dragline? Pull Shovel?

IT WILL PAY YOU TO CONSIDER

LIMA

Here's why

LIMA MACHINES are designed and built for hard usage. All components are engineered for long-life, trouble-free service, maximum production and operator convenience.

LIMA FEATURES—Anti-friction bearings at all vital bearing points, independent boom hoist, extra sturdy, heavy crawler base and rotating base, rugged, large diameter clutches and brakes, maximum weight behind center of rotation, LIMA Precision Air Control on all except the ¾ yard size—these are a few of the features contributing to outstanding, continuous performance.

THE LIMA LINE—includes a complete range of shovels from ¾ to 6 yards, cranes to 110 tons, draglines, variable. Crawler, truck and wheel-mounted types are available. Most types are quickly and easily converted from shovel to crane or dragline, and vice versa.

LIMA SERVICE is based on our sincere policy of being as interested in the continuous satisfactory service of LIMA machines as you are. Our regional offices and many distributors stock LIMA parts. Orders for maintenance parts get first priority at the factory.

LIMA REPRESENTATIVES are seasoned shovel men, qualified to help you select exactly the right equipment for your needs. A letter or 'phone call will put them to work on your problem.

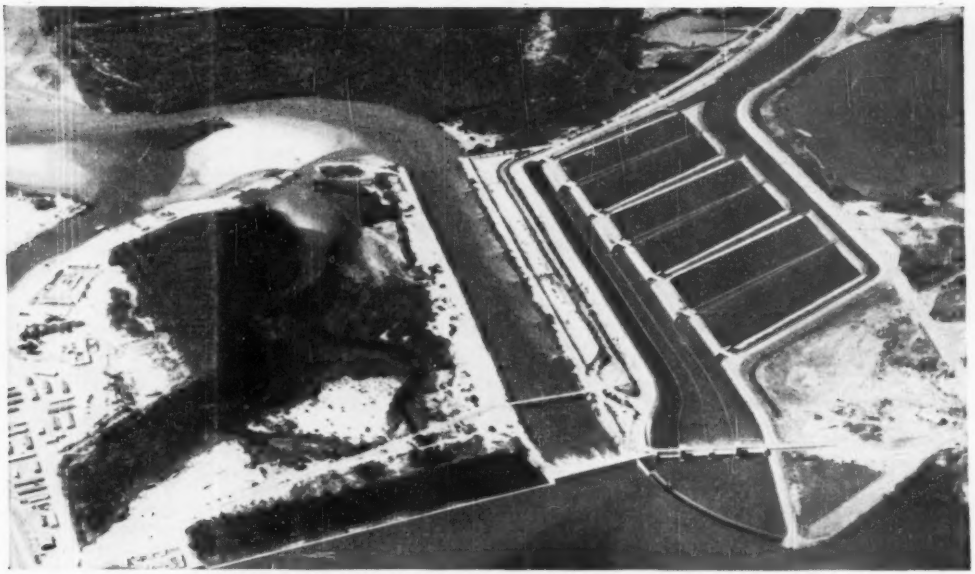
So, we say, consider LIMA. It costs nothing to get the facts.

Offices are located in the principal cities of the U. S. and the world. If you do not know the representative nearest you, write us and we'll tell you where to reach him.

Lima Shovel and Crane Division

Baldwin - Lima - Hamilton Corporation

Lima, Ohio, U. S. A.



Metal in these desilting basins and diversion channels requires a system of . . .

Cathodic protection at Imperial Dam

Joseph P. Collopy
Chief, Operations Division

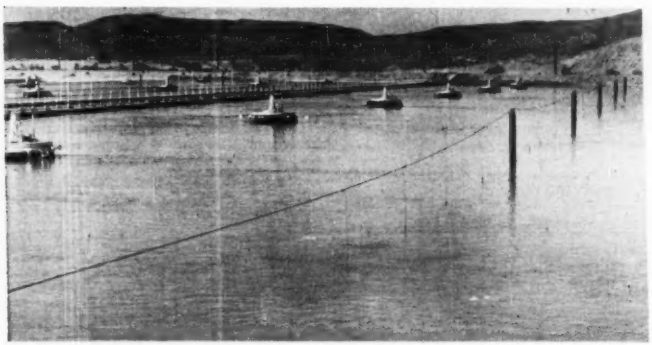
Waldo D. Freeman
Maintenance Engineer
Lower Colorado River District
U. S. Bureau of Reclamation
Yuma, Ariz

A CATHODIC protection system has been installed at Imperial Dam to prevent electrolytic deterioration of the heavy tonnage of metal installed at the structure. The protection work is intended to increase the period between applications of such protective coatings as paint and coal-tar enamel, thus minimizing maintenance costs.

Located on the Colorado River 40 miles north of the Mexican border, Imperial Dam has a battery of 72 desilting clarifiers, each 125 ft in diameter, and many large drum and radial type diversion gates. These clarifiers and the gates, together with their control conduits plus the trash racks and other installed apparatus, constitute a sizable area of metal.

The electro-chemical differences in these metals, plus the corrosive action of the highly saline water encourages establishment of electrolytic currents that tend to deteriorate unprotected surfaces. This process is accelerated at Imperial Dam by normally warm water temperatures.

The Bureau of Reclamation has experimented extensively with surface coatings aimed at retarding corrosive action of the water and soil on metal portions of the dam. However, the cost of such coatings (including the necessary sandblasting) amounts to as much as 50c a sq ft for some metal structures difficult to reach and remove.



CURRENT IS PASSED through cable suspended from poles jetted into desilting basin. Scrap metal suspended from cable acts as anode while clarifiers and other metal to be protected is cathode.

• **Artificial electric current**—Cathodic protection installation at a hydraulic structure such as Imperial Dam involves the artificial establishment of an opposing electric current just equal to or slightly greater than the current that would be induced by natural means. This current is introduced through artificial anodes (positive poles). It flows through the water and soil to the diversion gates and clarifiers, which act as cathodes. Under such a setup, the sacrificial anodes will cor-

ANODE—Rod serving as anode is severely pitted after only a few weeks' operation in system at Imperial Dam.

CATHODE—Bright metal coupon attached to clarifier detects effect of protection system.

rode and eventually decompose.

Since metal portions of Imperial Dam are of many types scattered over a considerable area, it was determined that the system used must provide general protection—with anodes feeding from a fairly central location—rather than separate cathodic protection installations. Good electrical conductance by the water encourages such centralized locations.

In the desilting basins, wood poles were jetted into the bottom to support a ¾-in. steel cable that serves as a conductor and runs the length of the basin. From the conductor are suspended pieces of scrap steel such as discarded pump suction rods or light rail. Aluminum alloy and carbon anodes are also being use in the protection system.

Metal installations outside the desilting basins are protected by additional current-carrying systems. For example, a steel cable is suspended in front of the main drum gates by rolled steel members attached to the piers that support the gates.

"Coupons"—small clean steel plates—serve as test pieces to determine the adequacy of the protection. After a year's service, no rust has been observed on the coupons—just a small deposit of salt. The anodes, on the other hand, are rapidly reduced and appear "very rusty."

•**Determination of charge**—Determining the amount of electrical energy required was complicated by the numerous pieces of metal of various sizes. Further, it was not known what part reinforcing steel would take in absorbing the energy.

For the initial installation three-phase, 220-volt rectifier units were secured from Army surplus. The direct current voltage of these units could be varied from 0 to 20 volts. The capacity was about 160 amp above anything required.

At present, the current consumed is 1.36 milliamp per sq ft of metal work; this amounts to 90 amp being applied to 66,000 sq ft of metal work in each of the three basins.

This seems adequate for protection, because much of the metal is still covered with coal-tar enamel. As the surface coating fails it may be that more current will be required. However, this additional load may be more than balanced by the protective film of carbonate salts that is being deposited on the bare metal through action of the cathodic protection system. The testing coupons will indicate future requirements.

In addition to the work initiated in the field, the chief engineer's office of the U. S. Bureau of Reclamation at Denver has made several small installations of an experimental nature on radial gates. Included are some that use magnesium and zinc as current-generating anodes. These installations show promise of being useful even for structures close to a power line.

Precision track tests guided missiles

A precision railroad track, stretching 11 mi. through desert country at the Naval Ordnance Test Station, Inyokern, Calif., will test full-sized guided missiles, rocket launchers, large aircraft components, aerial guns and various other components.

Preparation of engineering requirements and specifications for the precision rail line known as Supersonic Naval Ordnance Research Track—or SNORT—is well under way. Initial surveys will use $300,000 granted by Congress under $5,500,000 total already approved by the Research and Development Board and by the Secretary of Defense.

The track will allow recovery of all tested components and will simulate, as in the case of aerial guns, for instance, actual flight conditions.

The track, more than five times longer than the test track at nearby Edwards Air Force Base, Muroc, Calif., and eleven times as long as the present Inyokern test track, will accommodate research far beyond current facilities, according to Carl H. Heilbron, Jr., who is acting as project consultant.

Since the precision-built track allows recovery of components after test, it will provide data heretofore unobtainable in either wind tunnels or stationary research.

Engineering is under the supervision of W. H. Saylor, associate director for engineering at Inyokern. James Jennison of the Underwater Ordnance Department at the Navy test station's Pasadena Annex is the chief engineer who supervises the project.

"The track will be straight for most of its length," Heilbron says, "but part of it may be curved on a very large radius if conditions warrant."

Grades will be less than 1 percent with very gradual vertical curvatures. These gradual horizontal and vertical curvatures will cause only slight variations for vehicles traveling at high speeds. The track's design will provide a high degree of smoothness for high-speed travel.

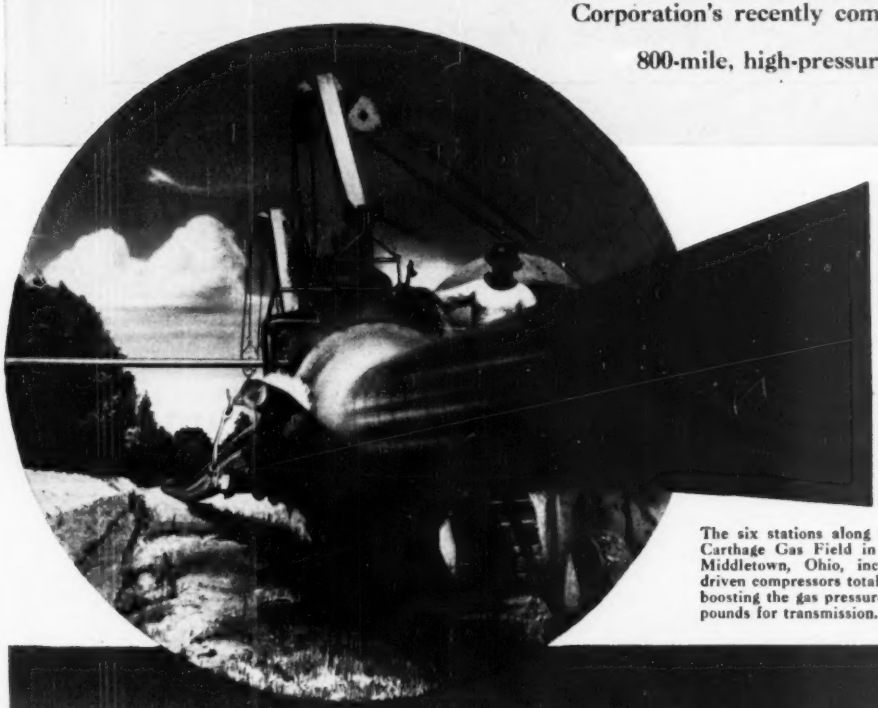
A design group of 20 engineers under Jennison has been assigned to the project. However, the first 6 mi. of the track are not expected to be completed for two years, with the complete 11-mi. project expected to require from three to four years to reach completion.

Engineers estimated that much of the next two years will be spent in completing the engineering design for the project.

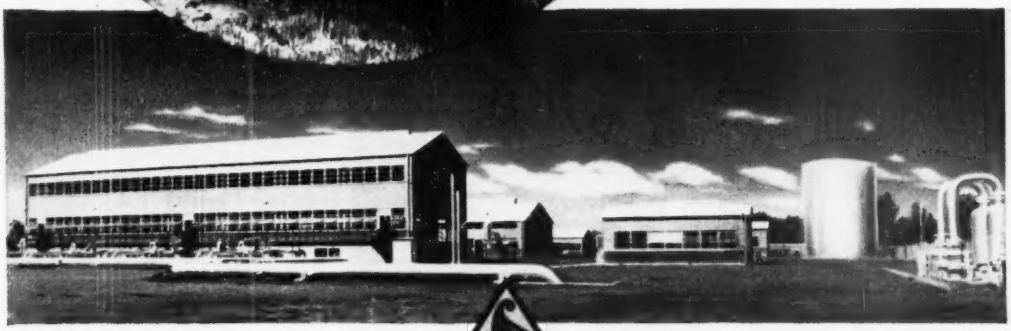
First drawings of the facility, already representing more than two years of engineering were expected to be in the hands of the Bureau of Ordnance by mid-December.

From East Texas to South Ohio

A current example of Stone & Webster Engineering Corporation's broad experience in design and construction for the natural gas industry is the six compressor stations on Texas Gas Transmission Corporation's recently completed 800-mile, high-pressure line.

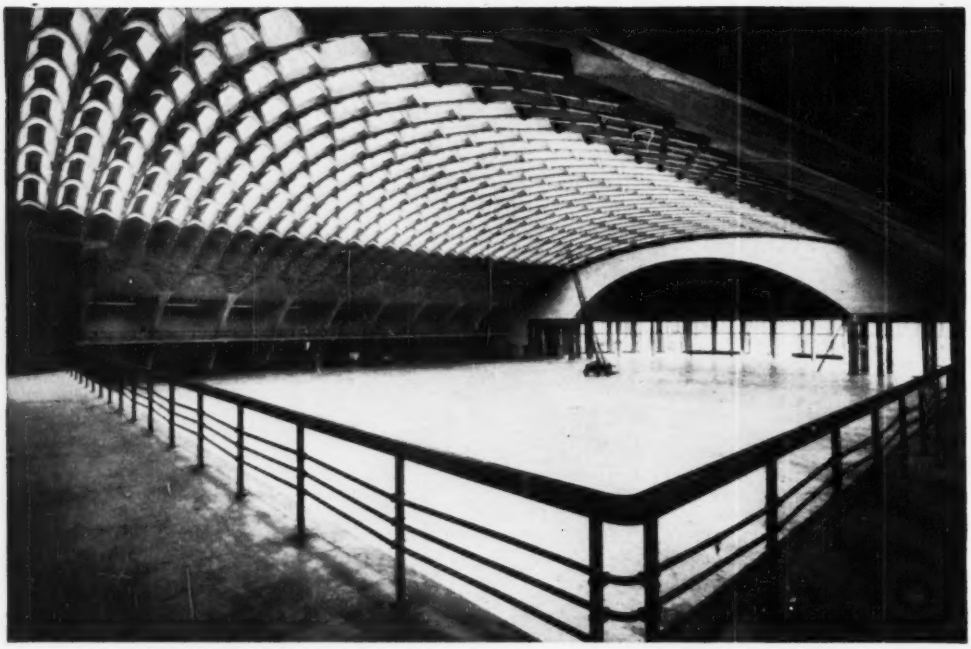


The six stations along the line between Carthage Gas Field in East Texas and Middletown, Ohio, include gas engine driven compressors totalling 42,500 hp for boosting the gas pressure from 575 to 800 pounds for transmission.



STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.



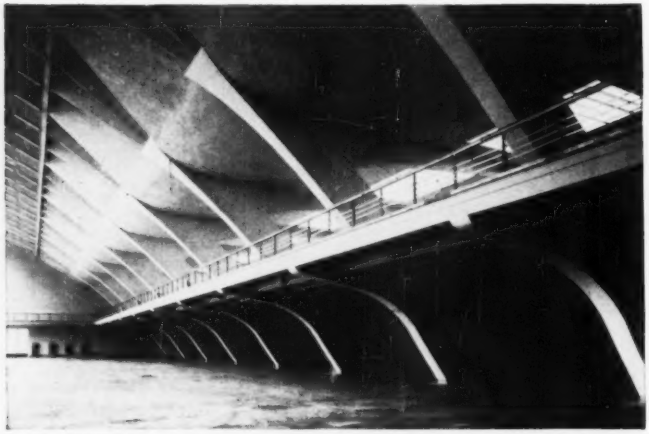
CORRUGATED ARCH ROOF composed of precast concrete units spans 275 ft over Hall B in Turin exhibition palace.

Huge arched roofs built of precast units

BOLD USE of precast-concrete units marked construction of the Palazzo Esposizioni (Exhibition Palace) in Turin, Italy. Forming long-span arched roofs over two exhibition halls in the building, these units made rapid erection possible.

Hall B was built in 9 months. It consists of a rectangular area 310x260 ft with no columns in the interior and a semi-circular area 260 ft in diameter with a dome-shaped roof.

Hall C was constructed in 6 months. It is rectangular in plan, 165 ft wide by 210 ft long. Here, too, there are no columns in the interior. The precast vaulted roof springs from four supports at the corners of the room.



EACH BUTTRESS supports three corrugations of the arched roof in Hall B.

• **Corrugated shell roof**—Extensive use was made of thin-shell corrugations in the roof construction. The cylindrical arched roof over Hall B, for example, has a corrugated surface. It is composed of curved precast-concrete units, 1.6 in. thick and 15 ft long, which, placed end to end, form an arch and placed side by side comprise the corrugated surface. Ends of these units are joined over reinforced concrete girders, which follow the curve of the corrugations.

Rising 60 ft above the precast-concrete main floor, the arches span 275 ft between cast-in-place buttresses. Corrugations are 5 ft 3 in. deep, with valleys spaced at intervals of about 8 ft. Throughout a large portion of the center of the span, both sloping faces of every corrugation consists of windows, for natural lighting. Artificial lighting is obtained with continuous fluorescent fixtures attached to the under side of the valleys.

Buttresses are spaced about 25 ft on centers. Each supports three corrugations, a leanto roof and a 41-ft wide

VAULTED ROOF with precast grid framing over Hall C is supported on eight arch ribs springing from four supports.

mezzanine, which cantilevers 8 ft out over the main floor. Buttress footings are founded on sand and gravel, being designed for a unit load of 6,000 psf.

• **Vaulted roof**—The thin-shell roof over 210x165-ft Hall C incorporates a vaulted surface 147x98 ft in plan. It consists of a diagonal grid of precast-concrete trough-like beams carrying precast, rectangular, pan-shaped units between them. The grid forms a vault, which is supported, 24 ft above the floor, on eight arch ribs.

Four of these ribs spring from four corner supports near floor level, spaced 170 ft apart longitudinally, 120 ft apart transversely. The ribs intersect in pairs at the ends of a 50-ft long horizontal ridge beam in the middle of the roof, 66 ft above the floor. In addition, four other ribs stiffen and support the edges of the vault. These ribs also spring from the corner supports.

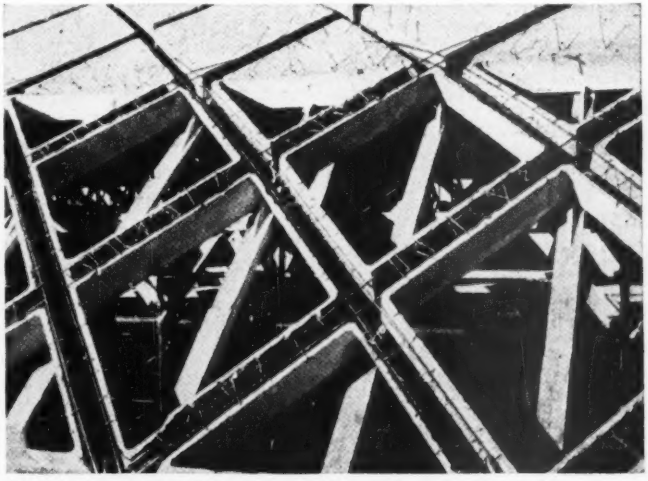
In constructing this roof, the contractor first cast the arch ribs and placed the trough-like grid beams on falsework. Then, he set the pan-shaped units on the beams, with flanges inserted in the troughs. Finally, he poured concrete in the troughs to tie the various components together.

The roof over the remainder of Hall C lies in a horizontal plane and is of precast corrugated construction. Corrugations are 0.8 in. thick, from 10¼ in. to 17¼ in. deep and 29.4 ft long. Valleys are spaced at intervals of about 3 ft.

The same grid type of construction as was used for the vaulted roof of Hall C was also selected for the dome-shaped roof over the semi-circular area in Hall B.

Roofs were proportioned for a live load of 31 psf placed in the most unfavorable locations and for a temperature change of 36 F.

Engineer Pier Luigi Nervi of Rome designed the Turin exhibition palace and Nervi and Bartoli were contractors. The owner is Societa Anonima Torino-Esposizioni, contractors for national and international exhibitions.



PRECAST UNITS rested on falsework until poured concrete united them.

Here's help in Specifying

EMERGENCY ELECTRIC POWER!

Model 10EL
10,000 watts

● Our special folder on Emergency Electric Plants contains helpful information on computing wattage requirements of standby systems, engineering and installation details. Complete specifications of Onan Emergency Electric Plants are included.

We also offer free engineering service on problems involving standby electricity. Write us on any question. There is no fee or obligation.

Onan Builds Standby Plants for any Type of Building

Many sizes—1,000 to 35,000 watts, for hospitals, radio stations, hatcheries, schools, industrial plants and many others.

see our CATALOG in SWEET'S FILE ARCHITECTURAL

Onan PRODUCTS *Send coupon today*

D. W. ONAN & SONS INC.
5729 Royalston Ave., Minneapolis 5, Minn.

Please send Standby Folder.

NAME_____

ADDRESS_____

CITY_____ STATE_____

READER COMMENT

Baked Alaska—plus! (1)

Sir: This office desires to call to your attention the erroneous impressions created by an article carried on Page 10 of your October 5 issue titled "Baked Alaska."

The article states that "—contractors in Alaska granted generous wage increases, then raised the rates charged workers for board and room to $40.00 a week—", without explaining that all workers were granted an across-the-board increase of 50¢ per hour to enable them to pay directly for their board and lodging rather than being subsidized as they have been in previous years by the contractors paying the difference between the actual cost and the charge made to the workers. This change was made at the express request of the workers involved. Also, since the Bureau of Internal Revenue had ruled that that amount of board and lodging previously furnished at no cost to the worker should be computed as taxable income, it was decided by Labor and Management that it would be more proper for the individual worker to have the actual income and possibly thereby better understand the reasoning of the Bureau of Internal Revenue.

Particular objection is taken to your statement that ham, beans and rice were and are being served six times a week. The messing contractor operates directly under the supervision of this office, and the operation is considered, both by Labor and Management, to be very successful. This office has long realized the necessity for furnishing palatable and nourishing food in this area and has made every effort not to stint where the workers' meals are concerned. We believe the quality and quantity of food served in our camps to far exceed the average for the construction industry.

G. M. Dorland
Lt. Colonel, CE
Acting District Engineer

Baked Alaska—plus! (2)

Sir: We have read your brief item in the October 5th issue under the caption "Baked Alaska." It states that contractors in Alaska granted generous wage increases this year, then raised the rates charged workers for board and room to $40.00 per week. To some this might imply that a subterfuge was used to offset wage increases which was certainly not the case.

The charge for board and room furnished to employees by contractors in Alaska was $1.50 per day for many years prior to 1950 despite the fact that the cost to the contractor was much greater. In September of 1949 the Commissioner of Internal Revenue ruled that board and room were furnished as compensation for services rendered and the value of such maintenance to the employee represented an amount upon which withholding taxes should be computed.

Accordingly it was agreed between management and labor to establish the rate of $5.75 per day for maintenance and to increase wages 57 cents per hour, on an estimated 10 hour average day, to compensate for the amount charged the employee. The principal objective of both sides was to stabilize construction costs at the 1949 level, and provide the same take home pay that the worker enjoyed during that year.

With the 57 cents hourly increase added to the employee's wages his withholding tax was proportionately increased and the winner, as usual, was the tax collector.

L. A. Moore, *Manager*
Alaska Chapter
Associated General Contractors
Anchorage, Alaska

Steel in concrete pavement

Sir: In your editorial (Oct. 22, 1950, page 23), "Steel Conservation Coming", you make certain suggestions for saving steel, such as the elimination of mesh reinforcement in pavements.

We believe our highway system is important enough at any time to warrant the very highest priority for materials considered essential in its construction. In peacetime, our national economy is built around highway transportation; in war, our very survival depends upon it. Therefore, from the standpoint of national defense, the elimination of materials essential to the improvement of our highways is basically unsound.

When mesh reinforcement is used in place of other types of reinforcing steels for reinforced concrete construction, a considerable saving of steel is made because welded wire fabric is a prefabricated material with high yield strength allowing the highest tensile design value. This saving in tonnage of steel handled from mills to project site also results in a saving of critical transportation facilities. Since less

(*Continued on page 51*)

THESE TWO WILL WORK BETTER THAN ONE!

This manifold assembly consists of two Pittsburgh-Empire single register compound meters complete with four Fig. 115 Nordstrom lubricated plug valves and two 8-inch reducing manifolds. The assembly has a laying length that is within A.W.W.A. standard for a single 8-inch compound meter. It is sold as a complete unit, at less cost than a single 8-inch compound meter.

New Rockwell 8-Inch Manifold COMPOUND METER UNIT

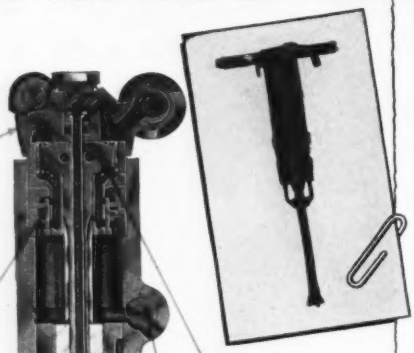
Here is the latest Rockwell idea that brings greater accuracy plus easier installation and servicing convenience to your big compound meter settings. This dual assembly of Pittsburgh-Empire meters measures much more accurately on both high and low flow rates than a single 8-inch compound. It is easier to handle—the complete unit of meters, valves and piping weighs 100 lbs. less than a comparable 8-inch meter. It can be broken down into sections for easy two man on-the-job assembly. Too, this battery installation allows for maintenance by shutting down one side of the manifold at a time without service interruption. The job of exchanging one of the meters for a new meter or a repaired and shop calibrated meter is simple. Write for full details.

ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PENNSYLVANIA

Atlanta Boston Chicago Columbus Houston Kansas City
Los Angeles New York Pittsburgh San Francisco Seattle Tulsa

HERE'S WHAT WE PUT *INTO* A ROCK DRILL ...SO YOU CAN GET MORE *OUT* OF IT!



Combination Backhead for blast rod, air tube or water tube operation greatly reduces cost of change-over parts. Air-operated automatic water valve is optional on same backhead.

Jet Valve is instantaneous, positive-acting, end-seating. Thrown by a jet of air, it provides precise timing. Increased piston hammer velocity results in high drilling speed, low air consumption, strong rotation and easy holding.

Integral Cylinder. All hammer bores are ground in line at one operation, allowing piston hammer to run in true alignment. Replaceable bronze cylinder bushing maintains the front cushion.

Resilient Retainer. Yoke-type, held in replaceable hardened steel bushings and spring-cushioned to dampen vibrations when pulling drill rods. Easily opened and closed, can't wear the chuck housing, and has positive lock-on nuts.

Four-Pawl Rotation. Four reversible pawls give maximum service at four rotation speeds — extra fast, fast, slow, extra slow.

Independent Blow Control changes from drill to blow with ease. Full line pressure available for emergency blowing. Large diameter air tube assures strong, constant blow. Side outlet exhaust is possible with optional blow valve.

Three-Piece Chuck. Chuck, sleeve and nut. Replaceable bronze chuck nut held in a steel sleeve checks piston flute wear.

Worthington BLUE BRUTES *Have Everything You Need For Hard, Fast, Money-Saving Drilling*

With every detail designed to make air do more work, Blue Brute Rock Drills combine the ruggedest construction with the easy handling that goes over big with operators. The WS-55, illustrated, is right for average jobs. For lighter work, use the WS-45 — for heavy duty, the WS-30.

3 More Reasons Why There's More Worth In A BLUE BRUTE!

WB-34 Paving Breaker
Hardest-hitting, easiest handling breaker in the 35-lb. class. Ideal where the operator has to lift the tool frequently in guiding its work.

W-14 Clay Digger
Developed in the field by men with practical experience in clay, and thoroughly proved by long, rigorous job-testing.

W-8 Backfill Tamper
Medium weight, with simple horseshoe valve and ample oil reservoir. A good "walker" that does a finished backfill job, ready for immediate paving.

Worthington Pump and Machinery Corporation
Construction Equipment Department
Harrison, New Jersey
Distributors In All Principal Cities
WORTHINGTON

Immediate deliveries from your nearby Worthington Distributor See him, or write us direct

BUY WORTHINGTON BLUE BRUTES

M1-1

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

(Continued from page 48)

steel is required and because welded wire fabric has been accurately spaced by machine in the factory before shipment, less labor is required for its placement on the job site.

Even during World War II, when 40 percent of our production facilities were required for the war effort (as against perhaps 10 to 15% in 1951), there was some question as to the advisability of leaving out distributed reinforcement in airport and highway paving. During that time the elimination of steel reinforcement meant thicker pavements, more frequent joints, and required the transporting, loading and unloading and placing of additional materials that would *not* have been required, if steel reinforcement had been retained in the design. The additional transportation of material, over already strained transportation facilities and overloaded highways, will always be subject to debate, particularly when the resultant saving in steel by the total elimination of its use in concrete highway construction is considered.

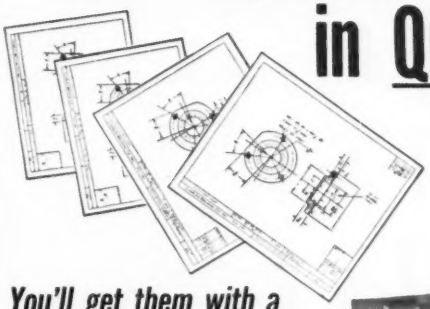
Today, if welded wire fabric or other types of distributed reinforcing steel were eliminated from all highway construction, the saving would be one-tenth of one percent of the finished steel shipped in 1949, or, in round figures, 50,000 tons out of 50,000,000 tons. This saving is negligible, considering the total tonnages of other materials that must be used, and taking into consideration the higher maintenance costs, the wear and tear on our transportation facilities, additional manpower requirements, and shorter pavement life that would result by the elimination of steel reinforcement.

Before we can determine how much steel will actually be saved by taking mesh out of the highways, we must consider the extra amount of steel required to provide more trucks to haul the additional materials necessary to build thicker pavements. The product-mix used in the building of trucks is much more critical to the war effort than the type of steel used for reinforcing. Consider also the additional steel and manpower used in the manufacture of all other materials that must be added when a very small amount of reinforcing steel is eliminated.

When all of these factors are considered, together with the benefits that a few pounds of steel per square yard of pavement gives to the highway user—the answer must be to continue to use welded wire fabric reinforcement in all concrete pavement construction.

FRANKLIN B. BROWN
Managing Director
Wire Reinforcement Institute
Washington, D. C.

Want Quality Copies in Quantity?



You'll get them with a Bruning Whiteprinter

The Bruning Whiteprinter produces quality copies — crisp, easy-to-read positive prints—in any quantity you desire. Get hundreds, if you want — with the last copy as clean and sharp as the first.

A Bruning Whiteprinter is the cleanest, fastest, most economical way to copy your drawings, records and reports. It handles any size up to 42" wide by any length. It makes black-on-white copies, or prints in any of 20 color combinations.

NEEDS NO PLUMBING OR EXHAUST DUCTS

To operate the Bruning Whiteprinter, just place the material* to be copied on a sheet of Whiteprint paper and insert both into the machine. Within seconds you have your copy — errorproof, smudge-proof, completely developed. Prints come out flat, dry and neatly stacked.

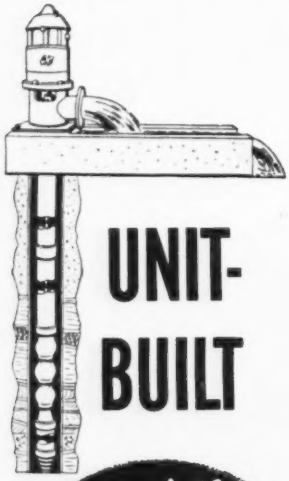
You have no installation troubles, either, with your Bruning Whiteprinter. You need only connect it to your electric supply, and it is ready to operate. It requires no plumbing; it needs no exhaust ducts.

Get top-quality copies in the quantity you want. Get them inexpensively and *on time*. Get a Bruning Whiteprinter! For full details, send coupon or write *Charles Bruning Company, Inc., Dept. C-11, 100 Reade St., New York.*

BRUNING WHITEPRINTERS
PERFECT PRINTS...WITHIN SECONDS...FOR PENNIES

**If your original is opaque, the Bruning Whiteprinter quickly copies it into translucent stock from which you make as many Whiteprints as you want.*

CHARLES BRUNING COMPANY, INC.
Dept. C-11, 100 Reade St., New York, N. Y. Offices in principal cities
Please send me free Booklet A-1056 describing the Bruning Whiteprint Process.
Name_____
Company_____ Position_____
Address_____
City_____ Zone____ State____



UNIT-BUILT

to work as a UNIT!

SMITHway
VERTICAL TURBINE PUMPS

Designed as a unit—built as a unit! That's the big reason why all SMITHway Pumps *work* better, longer, more economically. At A. O. Smith, all major parts, discharge head, shafts and bearings, impellers, bowls—even the motor and column pipe—are made under one roof!

Every SMITHway Pump brings with it the engineering experience earned by A. O. Smith in 76 years of constant engineering progress. Whatever your pumping requirements—check SMITHway first. Be sure of lower cost service and more years of unmatched dependability. Write for FREE booklet.

★ ***EXCLUSIVE!*** *SMITHway Pumps feature fabricated all-steel heads for maximum strength, maximum service!*

A.O.Smith
Vertical Turbine Pumps

Atlanta 3 • Boston 16 • Chicago 4 • Dallas 1
Houston 2 • Los Angeles 14 • Midland 5, Texas
New York 17 • Philadelphia 3 • Pittsburgh 19
Salt Lake City 1 • San Francisco 4 • Seattle 1
Tulsa 3 • Washington 6, D.C. • International Division: Milwaukee 1

FREE BOOKLET!

A.O. Smith Corporation
Dept. EN-151
Milwaukee 1, Wisconsin

Without obligation, send us your new illustrated descriptive bulletin on SMITHway Vertical Pumps.

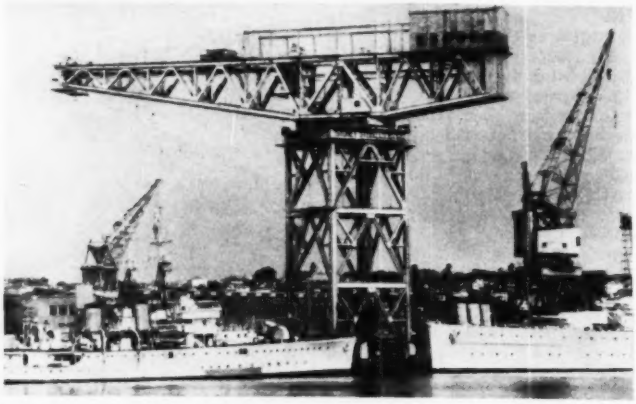
☐ I am interested in a distributorship.

Name_____

Street or Route_____ Box_____

City_____ State_____

DEVELOPMENTS ABROAD



SYDNEY'S BIG CRANE READY—The giant 250-ton cantilever crane at the Captain Cook Dockyard, Sydney, Australia, is nearing completion. The nose of its jib is already in position, and it is hoped to have the crane ready for test-loading before the end of the year. It will be the largest crane in the southern hemisphere. In all the British Commonwealth, it is the only one of its kind outside the British Isles. Sir Wm. Arrol and Co., engineers, of Glasgow, were the designers, and one of Arrol's men, A. Creswell, who supervised the construction of the Singapore crane, is there as supervising engineer—Fox photo.

Building Research Congress London, Sept. 11-20, 1951

Sponsored by professional institutions of Great Britain and The Department of Scientific and Industrial Research, with the support of industrial federations and the Ministry of Works, a building research congress is to be held in London, Sept. 11-20, 1951.

The object of the congress is to review recent developments in all branches of building science, to assess their importance and their effects on building in the future. Many of the papers presented will be written by authors from the United States and other countries outside of the United Kingdom.

There will be three divisions of the congress, holding concurrent meetings. The first will cover the engineering and structural aspects of building, including mechanization and prefabrication. Division 2 will be concerned with building materials; the third will deal with the factors affecting the comfort and efficiency of the people using the buildings.

Some of the broad topics to be considered are:

The influence of mechanization and prefabrication on techniques and cost of building.

The influence of modern research on structural design.

The influence of modern soil studies on the design and construction of foundations.

Research on weathering and durability. Timber technology, burnt clay products cement and concrete, acoustics, heating, lighting, ventilation.

The specific construction problems of hospitals, factories and schools.

All correspondence in connection with the congress should be addressed to the Organizing Secretary, Building Research Congress, Building Research station, Watford, Herts, England.

Study rehabilitation of Siamese state railways

Plans for rehabilitation of the Royal State Railways of Thailand will be checked for suitability and adequacy by American engineers prior to the starting of the improvements, it is announced. T. C. Frederick, chief engineer and H. P. Watson, chief mechanical engineer for De Leuw, Cather & Co., Chicago consulting engineers, will direct the study at Bangkok.

All facilities of the state-owned railroad were badly damaged during the Japanese occupation of the country. Rolling stock, repair shops and trackwork need complete overhaul and modernization.

It is expected that the engineering

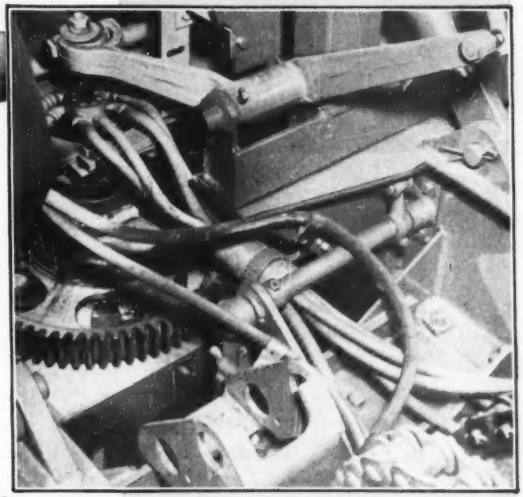
(Continued on page 55)

FLEXIBLE HOSE LINES

WITH DETACHABLE, REUSABLE FITTINGS

Always first
ON EARTHMOVING EQUIPMENT

Save time, save money and reduce inventory by putting the "Aeroquip Idea" to work for you. With Aeroquip you make your own flexible hose assemblies by cutting bulk hose to desired lengths and attaching Aeroquip Reusable Fittings. Assembly can be accomplished quickly and easily right on the job. No special tools are required. No training is needed. Aeroquip high quality Flexible Hose Lines improve performance and reduce maintenance. They eliminate leaks due to vibration and operate dependably at extremely high or low temperatures. They are widely used for hydraulic fluid, water, air, lubricating oils, gas and Diesel fuels and many other fluids.



Here Aeroquip Flexible Hose Assemblies are used in the hydraulic system of a wheel-mounted shovel crane. Wire braid reinforced, these heavy-duty hose assemblies match the ruggedness of hardworking earthmoving equipment of all types.

Always first

BD check into this money saving idea—

AEROQUIP CORPORATION

JACKSON, MICHIGAN

SALES OFFICES AND WAREHOUSES: 1051 NO. HOLLYWOOD WAY, BURBANK, CALIF. | 1215 SO. EAST GRAND AVE., PORTLAND 14, ORE. | 2912 N. E. 28TH ST., FORT WORTH 11, TEXAS | P. O. BOX 1586, HIGH POINT, NORTH CAROLINA | 4301 N. W. 36TH ST., MIAMI SPRINGS, FLORIDA | 72-74 STAFFORD STREET, TORONTO, CANADA

SALES OFFICES: 303 WAREHAM BLDG., HAGERSTOWN, MD. | EDINA BRANCH—BOX NO. 44, MINNEAPOLIS 10, MINN.

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U. S. A. AND ABROAD

Work-ability proved with every yard moved

★ **SPECIFY**

PREFORMED YELLOW STRAND

SPECIAL SCRAPER ROPE

Lang Lay, with Independent Wire Rope Core

1/2" or 9/16"

On your scraper the *cable* has a lot to say about *control*—control of the cut, yardage per load, round trips per hour, cost per job. To follow through on these opportunities for fast, economical production, see that *Preformed* Yellow Strand Special Scraper Rope goes aboard each earthmoving machine.

The operator gets *accurate* response with this smooth-running cable. It's limbered to take short bends and sudden shocks . . . to spool evenly . . . to handle safely when the line is shifted. Special lubrication equips the rope for rugged wear and exposure.

Your B & B distributor will gladly work with you to standardize on *Preformed* Yellow Strand Special Scraper Rope and to maintain a balanced supply of spares. See him, too, for long-lived hoist and drag lines.

Broderick & Bascom Rope Co., St. Louis 15, Mo.

Branches: New York, Chicago, Houston, Los Angeles, San Francisco, Portland, Seattle *Factories:* St. Louis, Peoria, Houston, Seattle

BRODERICK & BASCOM

Yellow Strand

PREFORMED WIRE ROPE

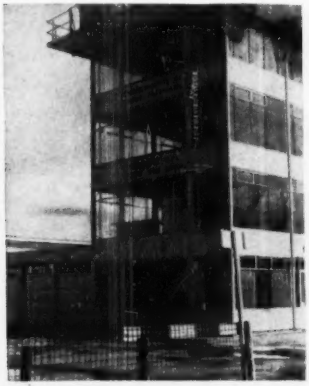
report will be completed shortly after the first of the year. The government of Thailand has negotiated a loan from the World Bank for the purchase of equipment.

Foreign Briefs

Ethiopian road repair—The International Bank for Reconstruction and Development has been asked by Ethiopia for financial help to repair its roads. During the Italian occupation of the country more than 2,000 miles of surfaced roads were built at a cost of $300,000,000, including a 700-mile road from Addis-Ababa to Asmara which crosses deserts and high mountains. These roads are now badly in need of repairs.

A jungle dam—Under a new Point 4 agreement signed with Ceylon, U. S. Bureau of Reclamation engineer Paul von der Lippe will remain in Ceylon for another year as an advisor on water developments. He is helping plan construction of the Galoya Dam in the heart of the Ceylonese jungle. The new dam will cost $15,000,000, have a 10,000-kw hydro-electric installation, in addition to providing irrigation water for some 100,000 acres.

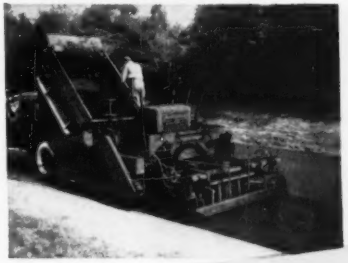
Power plants for Algeria—It is expected that by the end of 1950 Algeria will have spent $34,285,000 in Marshall Plan counterpart aid in building dams and power plants and in modernizing its coal mines. The program is counted on to triple the country's electric power, boost the output of dates and other food products through irrigation, and result in savings in coal imports.



"ELEVATION 13 FT BELOW SEA LEVEL"—That is the legend in Dutch and English—although a contradiction in terms—that appears on the new control tower at Schipol Airport, Amsterdam, Holland. Schipol probably is the only airport so situated.

IMPROVED AGGREGATE SPREADERS

Now available to lay up to 12" thickness in widths to 11', lesser thicknesses in widths to 12'6". Crawler or 4-wheel traction, always operating on subgrade. Accurately lay all tonnage trucks can handle—all base and surface aggregates, plant-mixed stabilized soil or free-flowing bituminous mixtures—yet cost half as much as bituminous pavers.



IMPROVED BITUMINOUS PAVER

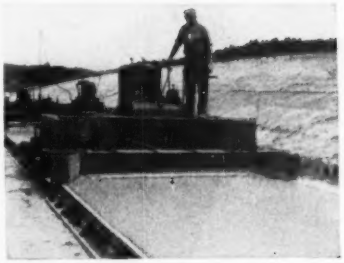
The only precision paver that automatically paves to grade line, is almost instantly adjustable for widths to 12'6" and lays any type material to a uniform density of mat not possible with machines which must put weight or traction on the new-laid surface.

better tools for 1951 paving

JAEGER-ENGINEERED

COMBINATION SCREW-AND-SCREED SPREADERS

A major advance in concrete paving. Remix, compact, spread, strike off, *then accurately meter correct amount of material to the finishing machine by means of 12" oscillating screed.* Spreader with one finisher gives you a *3-screed paving team* that is faster, more accurate, saves labor on all work and has saved cost of second finisher on high production jobs. Spreader, alone, will both lay and finish concrete base for city streets.



DIAGONAL SCREED FINISHERS

Another labor-saving, cost-cutting advancement. Diagonally adjustable rear screed works material solidly against upper form on curves and pitched slab, increases accuracy of all finishing, avoids tearing stiff mixes.

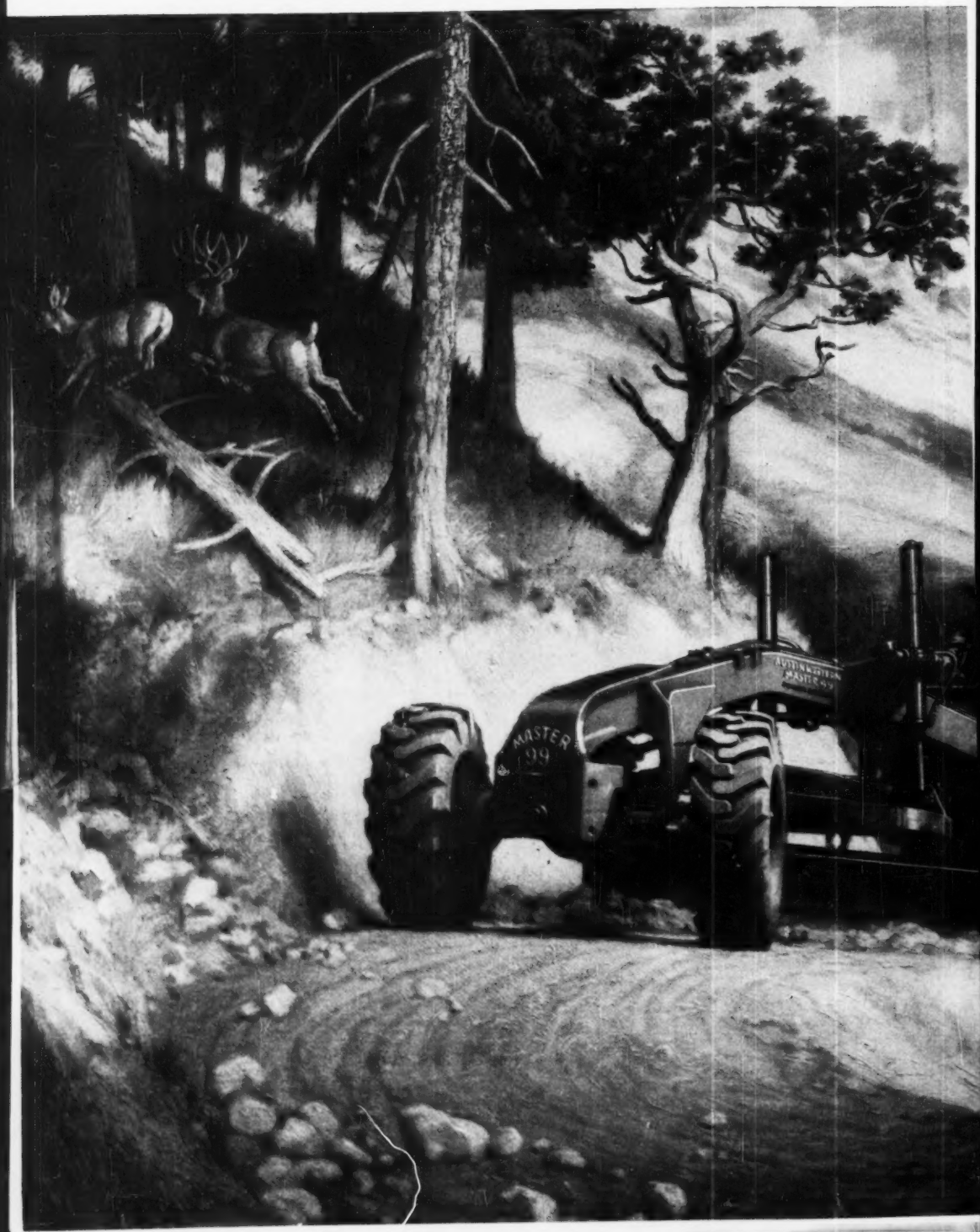
Before you plan and bid new work, talk these tools with your Jaeger distributor—or send for complete Paving Catalogs.

THE JAEGER MACHINE CO.

200 Dublin Ave., Columbus 16, Ohio

PUMPS • COMPRESSORS • MIXERS • HOISTS • TRUCK MIXERS

THE POWER GRADER T



HAT HAS *Everything* . . .

No Motor Grader without All-Wheel Drive and All-Wheel Steer can hope to equal the all-around operating efficiency of Austin-Western Master "99," "99-H" and "88-H" Power Graders.

On these machines there are no idling front wheels—no dead front end to consume power and reduce operating efficiency. The entire weight of the machine is on driving wheels—front and rear—contributing 100% to traction, and making it possible to move more material, farther and faster.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

AUSTIN-WESTERN COMPANY
Aurora, Illinois

BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1859

SAVE HOURS ON

CONDUIT AND PIPE

INSTALLATIONS

...with a GREENLEE PIPE BENDER

Cut costs, speed your jobs this efficient, easy, economical way. Make "on the job" bends in pipe and rigid conduit up to 5", thin-wall conduit and tubing with a GREENLEE Hydraulic Bender. One man operated for fast, accurate, uniform bending. Simple to operate, easy to set up and shift from job to job. Not only saves labor, but eliminates cost of many manufactured bends and fittings. Often pays for itself on first few jobs. Write today for free folder No. E-201.

TOOLS FOR CRAFTSMEN

GREENLEE

Other GREENLEE timesaving tools for industry: Hand Benders for Tubing • Hydraulic Pipe Pushers Knockout Tools • Auger Bits and Drills • Spiral Screw Drivers • Chisels and Gouges • And many others. Greenlee Tool Co., 2221 Columbia Ave., Rockford, Ill.

MUNICIPAL AFFAIRS

THE HEART OF HARTFORD—Outstanding in this airview of Hartford, Conn., are the following structures: In the left foreground is the white marble State Capitol; in the center foreground is the State Library; and in the right foreground is the State Office Building; in the left background is the old stone arch bridge over the Connecticut River (the newer Charter Oak Bridge does not appear as it is further down the river). The highest building shown is the Travelers Insurance Company's tower. (Samuel Kravitt photo)

Hartford, Conn., has an unusual housing problem

Hartford, the capital and largest city of Connecticut, with a population of 176,623, has a big housing problem which is by way of being solved through the Hartford Housing Authority and other local authorities under the federal and state housing programs in the Greater Hartford area.

While manufacturing industries constitute the largest source of employment in Hartford, home office insurance companies make a major contribution to the community's wealth and economic stability. The 16,000 employees of the 48 home or executive offices of insurance companies, with an annual payroll of about $50,000,000 in themselves rate a housing problem.

According to the 1950 census, 336,000 persons are living in the area, or 99,000 families in 98,000 dwellings, including 1879 built under the federal low-rent program started in 1937; also 260 dwellings built under the Connecticut moderate rental program, and 1680 built during World War II under the Lanham Act.

However, 5,000 dwellings were reported as substandard in 1940, and about 1800 temporary dwelling units built during the war are still occupied because the families have no other housing accommodations available to them, according to Bernard E. Loshbough, State Housing Administrator.

Local housing authorities in Hartford, East Hartford and Wethersfield will have a total of 1,422 rental homes built under the state program by early in 1951, and about 1,800 families in the Greater Hartford area will have bought homes of their own under the Connecticut home ownership program by the end of this year.

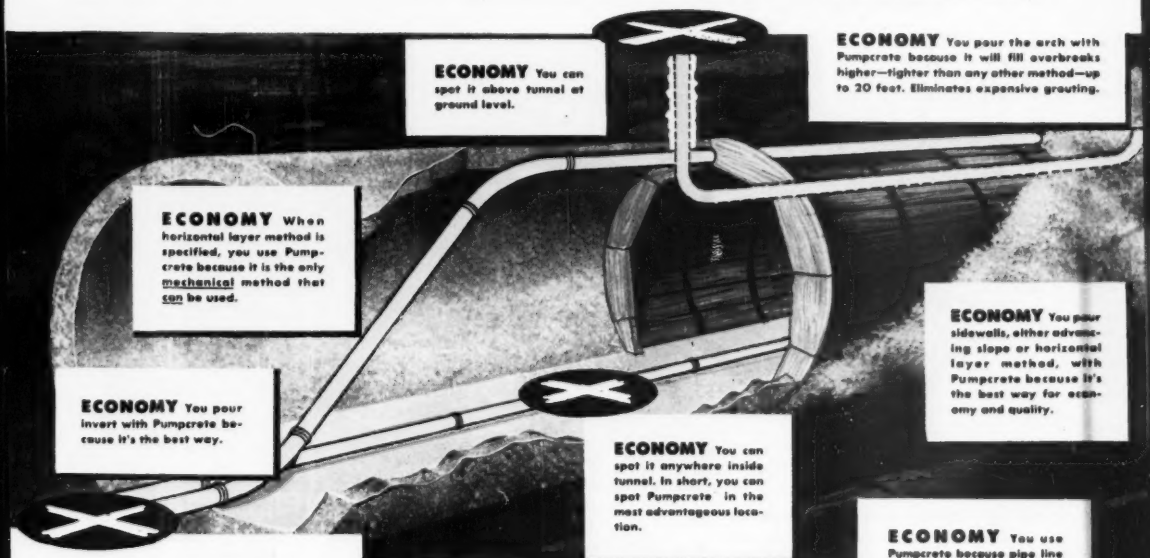
The most interesting engineering construction in the Hartford area is the 3950-ft long, $4,000,000 Charter Oak Bridge between Hartford and East Hartford. It is a deck-plate-girder structure with two 24-ft. roadways separated by a central mall. The main river crossing consists of an 840-ft girder continuous over three spans, the 300-ft center span being one of the longest of the kind in the U. S.

The North Meadows Expressway, recently opened, by-passes the city at the east and involved an outlay of about $3,000,000. It has been under

(Continued on page 61)

follow the spots...

FOR LOW COST, HIGH QUALITY TUNNEL LINING WITH PUMPCRETE!®



ECONOMY You can spot it above tunnel at ground level.

ECONOMY You pour the arch with Pumpcrete because it will fill overbreaks higher—tighter than any other method—up to 20 feet. Eliminates expensive grouting.

ECONOMY When horizontal layer method is specified, you use Pumpcrete because it is the only mechanical method that can be used.

ECONOMY You pour sidewalls, either advancing slope or horizontal layer method, with Pumpcrete because it's the best way for economy and quality.

ECONOMY You pour invert with Pumpcrete because it's the best way.

ECONOMY You can spot it anywhere inside tunnel. In short, you can spot Pumpcrete in the most advantageous location.

ECONOMY You can spot it outside of tunnel entrance.

ECONOMY You use Pumpcrete because pipe line flexibility and longer placing range eliminate need for expensive hauling and rehandling equipment—reduce labor requirements.

PUMPCRETE MEANS QUALITY— ASSURES A BETTER STRUCTURE . . .

QUALITY 1—Pumpcrete does not segregate concrete.

QUALITY 2—Pumpcrete is the only method that places sidewall concrete in horizontal layers without chuting or dropping of concrete.

QUALITY 3—Pumpcrete will handle stiffer mixes.

QUALITY 4—Pumpcrete reduces loss of slump between pump and point of placement.

QUALITY 5—Pumpcrete will fill overbreaks higher—tighter than any other method—up to 20 feet.

QUALITY 6—Pumpcrete assures a continuous flow of concrete to the forms . . . thereby eliminating many cold joints and related imperfections.

QUALITY 7—Pumpcrete is the only method that assures a tightly lined tunnel without need for grouting.

Ask your Rex distributor for the complete Pumpcrete story

BEFORE YOU LINE YOUR TUNNEL, SAVE MONEY BY ASKING TO SEE THE CHAIN BELT COMPANY'S EXCLUSIVE NEW FILM ON UNDERGROUND CONCRETE PLACEMENT.

CHAIN BELT COMPANY, 1633 W. Bruce St., Milwaukee 4, Wis.

CHAIN BELT COMPANY REX CONSTRUCTION MACHINERY

STRAN STEEL QUONSETS

provide valuable space, quickly and at low cost, as

FACTORIES • WAREHOUSES • MACHINE SHOPS • STORAGE BUILDINGS

Large Industrial Warehouse...5 Acres for Storage

Proof of the usable floor space Quonsets provide—quickly—for industrial needs is this interior view of National Steel Products Company's new Houston warehouse. It covers five acres (see inset picture).

ALL-STEEL Quonset buildings offer the ideal solution to America's fast-growing need for quick, economical construction.

For large industrial installations or small, Quonsets give you a variety of sizes . . . in a variety of lengths . . . superior fire-protection . . . lasting durability.

The amazing versatility of Quonsets was first shown in World War II . . . after V-J Day their fast erection and economy of material helped speed the nation's quick return to peacetime prosperity.

Now, more than ever, new and improved Quonsets are your best bet for all-round speedy construction. For full details, see your nearby Quonset dealer, or write direct to—

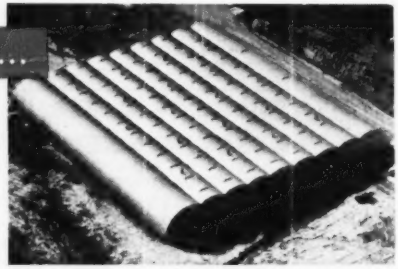
GREAT LAKES STEEL CORPORATION
Stran-Steel Division • Ecorse, Detroit 29, Michigan

PRODUCER OF NAX

Built in 12 Weeks...

at Half the Cost! ▷

Archie Furr, Lincoln, Neb., wholesaler, needed a new warehouse and office *fast,* at an economical figure. His multiple Quonset was completed for half the amount bid on conventional type building.



To Supplement Existing Structures . . . Quickly!

Quonset Multiple and Quonset 40 were chosen by Twin Coach Co., Buffalo, N.Y., to provide additional storage space and experimental manufacturing facilities. Flexibility of design and speedy construction make Quonsets ideal for factory additions.

STRAN-STEEL AND QUONSET REG. U.S. PAT. OFF.

NATIONAL STEEL CORPORATION

NATIONAL STEEL

construction about two years. Included is a parallel gravel-covered surface roadway designed to serve the meadows area for local traffic. The expressway spans two bridges and has an extensive drainage system discharging into the Connecticut River and a 360-ft long tunnel. Over 700,000 cu yd of fill were required to bring the roadway up to grade.

Municipal Briefs

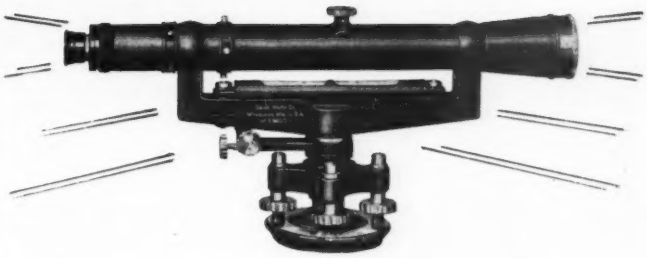
Columbus wants new station—The city council of Columbus is planning action before the Ohio Public Utilities Commission to have its 75-year-old union station ruled inadequate, naming the Union Depot Co. as defendant. The action follows a similar successful one by Toledo which is now enjoying a $5,000,000 union terminal recently opened.

Shopping center—The Hecht Co. has announced details of a $10,000,000 shopping center for Arlington, Va., a suburb of Washington. It will include a department store, 40 other stores and parking space for 2,500 cars. The 18-acre project is now under construction and completion is expected by the fall of 1951.

Master plan—The city plan commission has released the outline of a master plan for a long-range improvement program. It was aided by the board of public works and safety, Marion chamber of commerce, railroad association, city school board and city park board. The plan for the public works program probably will not be completed before 1953 and cooperating agencies will include the chamber of commerce and the Indiana economic council. An economic base study will be prepared so that unnecessary or extravagant projects will be eliminated.

Sewage disposal plant—Laconia, N. H., has been authorized to borrow $850,000 for a new sewage disposal plant with state guarantee of the bonds. The 1949 legislature passed a law giving the state permission to stand back of local borrowings for such purposes to a $5,000,000 limit. This act also encourages local communities to take advantage of low interest rate borrowing for the work of cleaning up polluted streams.

Milwaukee improvements—New sewers costing $3,000,000 and $2,000,000 of street construction head the list of major projects provided in the $10,173,600 permanent improvement program of Milwaukee, Wis., for the year 1951.



Compare before you buy

David White 18" Dumpy levels give you more features for less money

Look at the chart of important engineering and construction features of the David White 18" Dumpy Level given below. Compare those features, item for item, with every other recognized make of instrument. Then compare prices. You'll see why we say David White 18" Dumpy Levels give you more quality, more advantages important to you in your work for less money. See your nearest David White dealer for complete details on this and other equally fine engineering instruments or write direct to David White Co., 315 W. Court St., Milwaukee 3, Wisconsin.

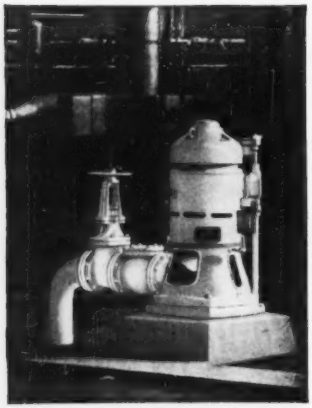
Features	D. White No. 7080	Instrument A	Instrument B
Magnifying Power of Telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (In minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered Leveling Screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — Complete with carrying case, tripod and accessories — F.O.B. factory	$280.00*	higher	higher

Prices Subject to Change Without Notice.

We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

DAVID WHITE COMPANY

315 West Court Street
Milwaukee, Wisconsin



durability

● HERE'S WHERE IT PAYS OFF

It is the amazing durability of Layne well water systems that pays off for big petroleum refineries. They have a situation—as do most heavy water users—where a supply failure would stop everything. When they buy a Layne installation, they know that they are dealing with the world's most widely experienced well water developers;—an organization that knows what it takes to build smooth operating and long lasting systems. Layne has the kind of engineering skill and special equipment for doing the job complete, always delivering all and generally much more water than is promised by their contracts.

Layne designs and builds well water supply systems of any size or capacity for serving any purpose—municipal, industrial, agricultural or drainage. In buying a well water system, be sure the one you select is proven in durability. Once installed it is yours regardless of lasting quality. Be extra sure that the one you buy is right. For further information, catalogs, etc., address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

Layne

WELL WATER SYSTEMS

VERTICAL TURBINE PUMPS

ASSOCIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. • Layne-Atlantic Co., Norfolk, Va. • Layne-Central Co., Memphis, Tenn. • Layne-Northern Co., Mishawaka, Ind. • Layne-Louisiana Co., Lake Charles, La. • Louisiana Well Co., Monroe, La. • Layne-New York Co., New York City • Layne-Northwest Co., Milwaukee, Wis. • Layne-Ohio, Columbus, Ohio • Layne-Pacific, Inc., Seattle, Wash. • The Layne-Texas Co., Ltd., Houston, Texas • Layne-Western Co., Kansas City, Mo. • Layne-Minnesota Co., Minneapolis, Minn. • International Water Corporation, Pittsburgh, Pa. • International Water Supply, Ltd., London, Ont., Can. • Layne-Hispano Americana, S. A., Mexico, D. F. • General Filter Company, Ames, Iowa

MEN AND JOBS

Ernest H. Stork, planning engineer with both Columbus and Franklin County, Ohio, experience, has been appointed director of city planning in Columbus. He leaves the post of senior planner for the Franklin County Regional Planning Commission. He will continue as secretary of the Regional Planning Commission.

William D. Monroe, superintendent of public works for Marquette, Mich., has been named city engineer. He was graduated from Marquette University, served in the U. S. Navy as a lieutenant senior grade, and was assistant resident engineer of the Way Dam Reservoir and the Peavey Falls project in Michigan.

Julius D. Solomon, a civil engineering graduate of the University of Toronto, has opened an office as a consulting engineer at Dartmouth, N. S.

Vaughn Downs has been advanced from field engineer to acting supervising engineer of the Columbia Basin Project's irrigation division at Ephrata, Wash., to succeed **H. A. Parker,** who became acting district manager with the retirement of Frank A. Banks. A civil engineering graduate of Kansas University in 1931, Downs then joined the Denver staff of the Bureau of Reclamation. He moved to Grand Coulee Dam in 1934 as an engineering inspector. He later was construction engineer.

Robert B. MacKenna has been appointed superintendent of public works for Stoneham, Mass., succeeding Albert E. Casey. Since 1932 MacKenna has been assistant superintendent of the Stoneham highway department. Mr. Casey has become superintendent of public works at Norwood, Mass.

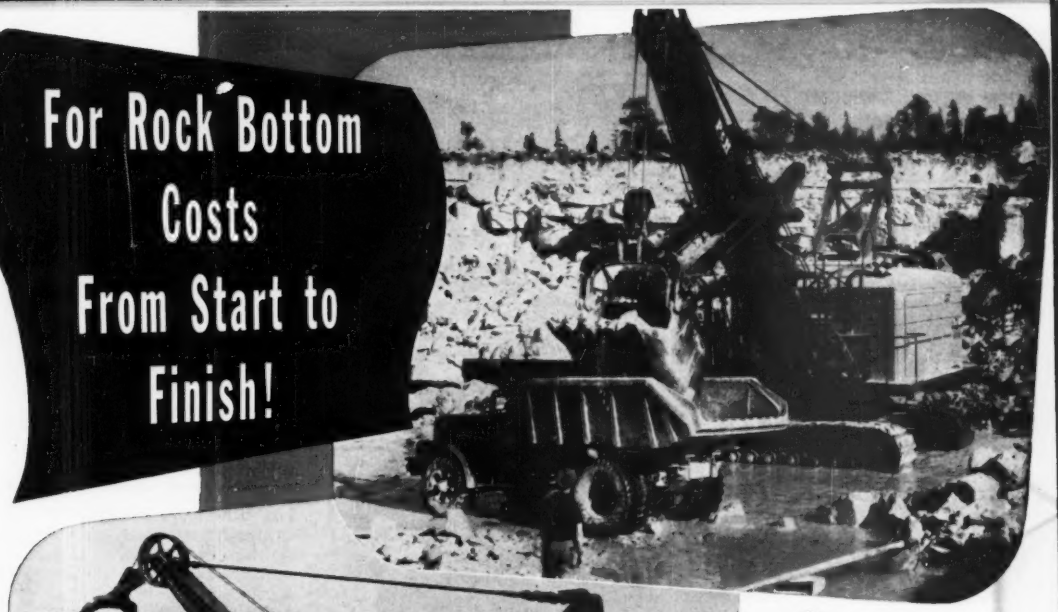
Donald MacAskill, has been named acting highways engineer for Cumberland County, N. S. by the Nova Scotia highways department. He had been assistant to the late Hugh Morrison, following transfer of Lorne Whiteway to Sidney, N. S.

Howard Phelps, retired Washington State College engineering professor, has accepted a temporary appointment as Whitman County engineer at Colfax, Wash. He replaces **Wayne Arrasmith,** who left for Army duty on a leave of absence. Phelps was professor of highway engineering at Washington State College for 31 years until his retirement Sept. 15.

(*Continued on page 64*)

Nearly 10,000 ft. of flood-control and hydro-power tunnels are being driven at the Corps of Engineers' Garrison Dam on the Missouri River in North Dakota under the supervision of, left to right, John W. Sibert, area engineer; E. L. Knutson, resident engineer; and Nick Marsh, Jr., project manager for S. A. Healy Co., contractor on the tunnels.

For Rock Bottom Costs From Start to Finish!



START . . . FLUXING STONE
A P&H Model 1400 Diesel-Electric (4 yd.) shovel, owned by Drummond Dolomite Inc. at Drummond Island, Michigan.

FINISH . . . BLAST FURNACE SLAG
A P&H Model 1400 Diesel-Electric shovel owned by the Buffalo Slag Co., Buffalo, New York.

P&H DIESEL-ELECTRIC SHOVELS

with *MAGNETORQUE** HOIST DRIVE

Now, you can have electric shovel efficiency *anywhere* with a P&H Diesel-Electric quarry and mining shovel. It's a complete electric shovel . . . with the addition of a diesel engine to furnish power . . . entirely independent of high line service.

Years of the toughest rock digging have proved the P&H Diesel-Electric from every standpoint . . . dependable operation . . . less maintenance . . . rock bottom tonnage costs.

This simplified P&H Diesel-Electric shovel is made possible by the exclusive P&H Magnetorque Hoist Drive. Hoist generator, hoist motor, slip friction clutch and other mechanical devices are completely eliminated. Magnetorque is only one of many P&H Added Values. Ask for Bulletin X83-DE.

Every Third P&H Electric Shovel Sold is a Repeat Order.

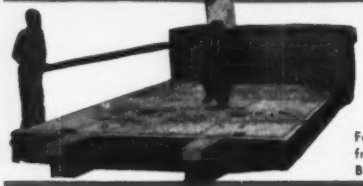
P&H **ELECTRIC SHOVELS**
4404 West National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION

*Trade-Mark of Harnischfeger Corporation for electro-magnetic type clutch

LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENTS • EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PREASSEMBLED HOMES

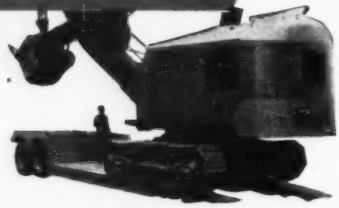
Like the Camel.. IT GETS DOWN!



For EASIEST possible LOADING, the frame is lowered to ground WITHOUT BLOCKING.

FOR EASIER LOADING!

Maximum deck height of ONLY 16 INCHES assures RAPID, SAFE LOADING of equipment.



ROGERS POWER LIFT DETACHABLE GOOSENECK TRAILER

PATENTS PENDING

5 EXCLUSIVE ADVANTAGES

1. Carries heavier loads on larger tires.
2. Detaches quickly for fast, easy front loading.
3. Stoops to clear low overhead obstructions.
4. Raises its deck to clear high banked crossings.
5. Is detached, loaded and reattached in 5 minutes.

Yes, with this unique trailer you can detach the gooseneck, load up, reattach the gooseneck and drive off in a matter of ONLY 5 MINUTES.

Complete Literature available upon request—Any Rogers Dealer will demonstrate its features right on your desk, with an OPERATING SCALE MODEL.

EXPERIENCE *builds 'em* ROGERS PERFORMANCE *sells 'em*

ROGERS BROS. CORP.

ALBION, PENNA.

Rogers Tilt-Top trailers embody a special shock absorber which cushions the loading and unloading action. Various sizes available.

Lt. Col. John P. Buehler is the new district engineer of the Corps of Engineers at Seattle, Wash. He had been serving as executive officer, North Pacific Division at Portland, Ore.

Fred Schlemmer, formerly with TVA as project manager on Fontana, Chickamauga and other dam jobs, has joined Burns and Rowe, New York, as general superintendent in charge of outside construction.

Loren Heiple has been appointed head of the Department of Civil Engineering at the University of Arkansas, Fayetteville. Previously he was city engineer at Boone, Iowa, and before that he taught at Iowa State College.

Clarence R. Hall has been appointed superintendent of the Dover, N. H., water department, succeeding **Walter C. Campbell**, retired. Hall had charge of water supply and distribution at Fort Ethan Allen, Vt., for 7 years and lately has been water superintendent for the Portland, Me., harbor defense organization.

Paul Beerman, for 21 years a San Diego city engineering department employee, has been appointed city hydraulic engineer succeeding the late Fred D. Pyle. Beerman has been assistant hydraulic engineer since 1945 and acting hydraulic engineer for several months. He was graduated from the University of Southern California in 1926 with a B. S. degree in civil engineering.

Andrew Brodsky, until recently on the civil engineering staff of the College of the City of New York, is now working as a structural and production engineer for the Porete Manufacturing Co., North Arlington, N. J., manufacturers of precast concrete products. Among other duties, he will work on the development and manufacture of prestressed concrete slabs.

Robert F. Coleman has been appointed city engineer of Wilmington, N. C.

Col. Lewis W. Prentiss is division engineer, Southwestern division Corps of Engineers at Dallas, Tex. Recently he was appointed chairman of the Intra-Agency committee of the Arkansas, Red and White river basins.

Col. B. C. Fowlkes, Jr., district engineer at Vicksburg, Miss., since July 1949, has been assigned to the Granite City Engineer Depot, Granite City, Ill., as Commanding Officer, and has taken up his new duties.

Robert C. Kennedy, recently appointed chief engineer of the East Bay Municipal Utility District, California, will coordinate and supervise the engineering functions of the district, and will oversee the design and construction of its sewage disposal project. He is a 1921 graduate of Cornell University.

RIGHT IN THE GROOVE

You just can't beat the COMPLETE Victaulic System for efficient piping construction... it's the EASIEST WAY TO MAKE ENDS MEET!

EASY, QUICK, SURE—that's the Victaulic Method. Pipe ends are joined in a jiffy by a simple two-bolt coupling. A speed or T-wrench is the only tool required. AND pipe joints will stay positive-locked, leak-proof with Victaulic Couplings. They're designed to stand up under extreme pressure, vacuum or strain conditions!

With the Victaulic Method, grooving pipe ends is a cinch..."Vic-Groover" grooves 'em automatically in half the time of a conventional pipe threader!

To give complete versatility and dependability to the Victaulic Method, Victaulic offers a complete line of Full-Flow Elbows, Tees, and other fittings all carefully designed for free-flowing efficiency.

"JOIN UP" with the Victaulic Method and save time, work, and dollars on construction and maintenance "right down the line!"

Make your next piping job ALL VICTAULIC. Write today for Victaulic Catalog and Engineering Manual No. 44-8D.

VICTAULIC COMPANY OF AMERICA
30 Rockefeller Plaza, New York 20, N. Y.
Victaulic Inc., 727 W. 7th St., Los Angeles 14, Calif.
Victaulic Company of Canada, Ltd., 200 Bay Street, Toronto 1
For Export outside U. S. & Canada: PIPECO Couplings & Fittings, Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

27TH VICTAULIC YEAR

Copyright 1951, by Victaulic Co. of America

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

ON ALL KOPPERS PILES

This brand is *your* protection

The Brand Shows:

KOPPERS.....The Company Name
HO.....The Treating Plant (Houston, Tex.)
51.....The Year (1951)
C.....The Preservative (Creosote)
12.....The Retention (12 Lb. Per Cu. Ft.)

For *permanent* foundations—for *economical* foundations—specify Koppers Pressure-Creosoted Timber Piles. These piles are fully protected against insects and decay. They are low in first cost—usually lower than other permanent pile materials.

Koppers Piles are Branded

Koppers burns its brand into every one of its pressure-creosoted piles. This brand is *your* protection; it is *your* assurance of quality. And it plainly tells you and your inspector what you are getting in preservative and retention.

Accepted by Building Codes

Modern Building Codes — National, Regional and City—recognize the permanence of Pressure-Creosoted Piles in building foundations. Koppers Piles meet Code requirements.

Lengths up to 130 Feet

The next time you're in the market for foundation or marine piles, let us give you our quotation. Koppers Pressure-Creosoted Piles, up to 130 ft. in length, can be supplied.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS

MEETINGS

At a recent Region conference of the Associated Equipment Distributors at Santa Barbara, Calif., Frank A. Nikirk, professor of civil engineering at the University of California, reviewed the objectives and progress of a new course which he is directing to train engineering students for later work with contracting firms on administrative and executive levels. The course is designed to acquaint students with basic principles underlying construction practices; the selection of proper methods; the operation and purposes of plant and equipment.

Henry Hale, president of Milton Hale Machinery Co., Albany, N. Y. in his discussion of national AED activities, stressed the need to go to the right sources in Washington to get answers on matters affecting the construction industry. He advised members who want special information from Washington to clear their questions through the association's executive office in Chicago, for in many cases the information may already have been obtained.

C. H. Jeffries of Garlinghouse Bros, Los Angeles, spoke on the declining supply of competent workmen and the best methods of keeping them on the job. He advised distributors to secure occupational charts from the Department of Labor to define and classify employees properly if they qualified for essential jobs.

Three subjects are being stressed by L. F. Grant, of Kingston, Ont., field secretary of the Engineering Institute of Canada, in his addresses to branches of the institute through the eastern provinces. They are: "Improper" importation of United States engineers to work in Canada on projects for which Canadian engineers are also qualified; extending co-operation and assistance with civil authorities in each district in civil defense work, and aiming at an efficient program for all Canada; and the advisability of providing young men with all the facts before encouraging them to enter the engineering profession.

A plan for classifying sanitation personnel on a regional basis was approved by state sanitary engineers from five states at a meeting under the sponsorship of the Department of Sanitary Engineering of the University of North Carolina School of Public Health. The group, representing North Carolina, South Carolina, Georgia, Virginia and West Virginia, also elected a new steering committee composed of L. M. Clarkson of the Georgia State Board of Health; J. M. Jarrett of North Carolina; J. D. Baker of West Virginia; and C. A. Farrish of South Carolina, executive secretary.

Wiley N. Jackson, Roanoke, has been chosen president of the Virginia Road Builders Association; Jesse R. Ford, vice-president; and Richard F. Krause, secretary-treasurer.

The Iowa section of the ASCE has elected Prof. C. J. Posey, president; Wray Furlong, vice-president; Neil Welding, director; and L. O. Stewart, secretary-treasurer.

CALENDAR

Highway Research Board, National Research Council, annual meeting, Washington, D. C., Jan. 8-12.

American Society of Photogrammetry, annual meeting, Shoreham Hotel, Washington, D. C., Jan. 10-12.

N. Y. Section AWWA, luncheon meeting, Park-Sheraton Hotel, New York City, Jan. 16.

Louisiana Engineering Society, St. Charles Hotel, New Orleans, Jan. 18-20.

Industry—College Conference, Case Institute of Technology, Cleveland, Ohio, Jan. 20.

Canadian Construction Association, Chateau Frontenac, Quebec, Que., Jan. 21-24.

National Association of Home Builders, annual convention and exposition, Stevens and Congress Hotels, Chicago, Ill., Jan. 21-25.

Conference, Wisconsin County Highway Commissioners and County Highway Committee Members Association Milwaukee, Wis., Jan. 23-25.

Third California Conference on Street and Highway Problems, University of California, Berkeley, Jan. 24-26.

Associated Equipment Distributors, annual meeting, Stevens Hotel, Chicago, Ill., Jan. 28-Feb. 1.

Association of Asphalt Paving Technologists, Cosmopolitan Hotel, Denver, Colo., Feb. 5-7.

N. J. Section, AWWA, luncheon meeting, Hotel Essex House, Newark, N. J., Feb. 14.

Midwinter Housing Conference, S. W. Research Institute's division of Housing and Construction Technology, Statler Hotel, Washington, D. C., Feb. 13-14.

Illinois Annual Conference on Highway Engineering, Urbana, Ill., Feb. 20-22.

American Concrete Institute, St. Francis Hotel, San Francisco, Calif., Feb. 20-24.

Industrial Waste Conference, Purdue University, La Fayette, Ind., Feb. 21-23.

American Society of Civil Engineers, convention, Rice Hotel, Houston, Texas, Feb. 21-23.

Midwest conference, Building Officials and Inspectors, Purdue University, La Fayette, Ind., Feb. 26-28.

American Concrete Pipe Association, Waldorf-Astoria Hotel, New York City, March 1-3.

American Road Builders Association, Schroeder Hotel, Milwaukee, Wis., March 12-14.

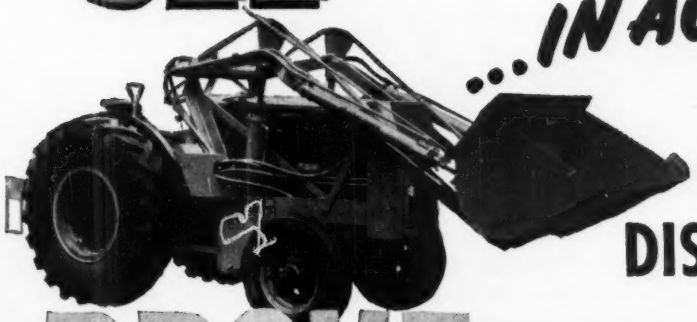
American Railway Engineering Association, Chicago, Ill., March 13-15.

N. J. Sewage and Industrial Wastes Association, Haddon Hall Hotel, Atlantic City, N. J., March 14-16.

N. Y. State Association of Highway Engineers, Rochester, N. Y., March 28-30.

N. J. Society of Professional Engineers, Haddon Hall, Atlantic City, N. J., Apr. 6-7.

SEE THE LULL Shoveloader ...IN ACTION at your LULL DISTRIBUTOR



PROVE to YOURSELF that it...

- Digs harder material
- Gets buckets heaping full
- Reaches farther and higher
- Provides greater operator safety
- Works the year around

WORK? YOU SHOULD SEE IT!

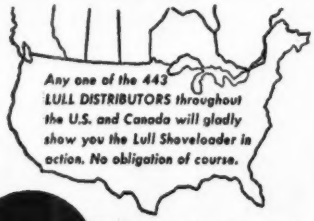
THE LULL SHOVELOADER is the most powerful digger in the industrial wheel-type tractor loader field. With powerful double acting hoisting and bucket control cylinders, it will dig harder material than any other loader in its class. And its natural scooping action actually scoops rather than pushes the dirt into the bucket . . . gives you a heaping full bucket every time. You dig and load more material with less waste motion . . . keep trucks moving.

LOAD FROM THE END of the truck . . . no need to go from one side to the other. The Lull Shoveloader loads easily to the very front of the box. Load pushing, half load hauling, or special maneuvering are completely eliminated!

THE SHOVELOADER OPERATOR IS SAFE . . . Just ask any operator. He will tell you he prefers Shoveloader safety because he is clear of falling rocks and moving mechanism.

MANY ATTACHMENTS are also available for the Lull Shoveloader to make it a continuous worker, month after month, regardless of weather. In addition to a wide range of material buckets, special buckets for pavement ripping and concrete can be mounted quickly when needed. Sweepers, log lifting forks, crane attachments, and bulldozer keep your Shoveloader working the year around. You can put them on in a jiffy.

SEE A LULL SHOVELOADER PERFORMANCE TEST. You owe this to yourself to prove that a Lull Shoveloader is your best buy because it will do more work and earn more profits for you! If you don't know your Lull Distributor, fill in and mail the coupon today. We'll gladly send you his name and there will be no obligation!



Any one of the 443 LULL DISTRIBUTORS throughout the U.S. and Canada will gladly show you the Lull Shoveloader in action. No obligation of course.

SEND COUPON NOW FOR THE LULL DISTRIBUTOR NEAREST YOU!

LULL Manufacturing Company
3612 East 44th Street, Minneapolis 6, Minn.

☐ Please send me name of my nearest LULL distributor.
☐ Send literature only.

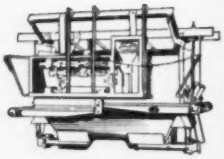
Name.....Title.....
Company.....
Address.....Zone.....State.....
City.....

LULL Manufacturing Company
3612 East 44th Street Minneapolis 6, Minn.

Designers and Builders of The Largest Line of Allied Equipment for Industrial Wheel Type Tractors

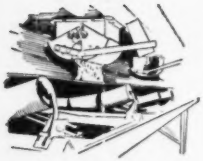
SHOVELOADERS • UNIVERSAL LOADERS • FLUID-DRIVEN SWEEPERS • LULLDOZERS • SHOULDER MAINTAINERS

TO GET THINGS DONE IN '51— SEE BUTLER BIN



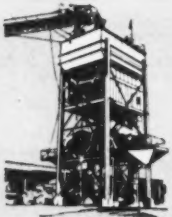
WEIGHING BATCHERS

New standards of accuracy and efficiency from a roadbuilders batcher to completely automatic, recording weighing batchers for high production ready mixed concrete operations.



BUTLER BIN GATES

Bin gates are subject to heavy wear. Keep extras on hand to avoid shutdown. BUTLER makes them in rotary, clamshell, roller and radial types.



CENTRAL MIXING PLANTS

BUTLER PLANTS are widely recognized as examples of brilliant engineering in a great variety of materials handling problems. Here the experience of the BUTLER Engineer is invaluable.

1951 will be a year of action and unprecedented production. The highway program is expanding at an accelerated pace. Demand for Ready Mixed Concrete is climbing week by week for building construction is still far behind the nation's requirement.

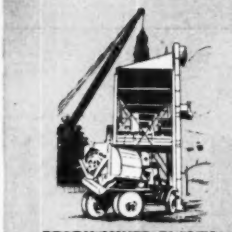
Production schedules such as these mean modern equipment—and modern equipment means BUTLER and BUTLER *Engineered Design.*

In your plans for new plants—or for modernizing existing equipment "to get things done in '51" it's the soundest of common-sense to consult the BUTLER engineer.

BUTLER BIN CO.

947 Blackstone Ave.

WAUKESHA, WISCONSIN



READY MIXED PLANTS

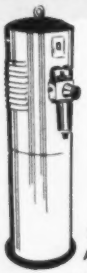
Ready Mixed Concrete Plants for every production level — engineered by BUTLER for the highest efficiency and lowest cost operation.

AGGREGATE PLANTS

Highly portable, quickly erected, BUTLER Aggregate Plants save time and money in meeting high pressure paving schedules.

BULK CEMENT PLANTS

A wide range of capacities for every roadbuilding job. Faster batching, split-pound accuracy. Shown is the CR-37-58 providing 650 bbls. capacity.



CEMENT AERATOR

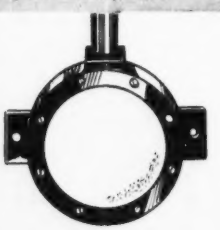
Compressor, engine, pump and complete controls all in one compact, space-saving unit. The BUTLER CEMENT AERATOR is essential to a smooth flow of cement.

CONCRETE PRODUCTS PLANTS

BUTLER engineers have an international reputation for highly efficient design in Concrete Products Plants. BUTLER offers an engineering service that assures a maximum profit.

THE NEW BUTLER '102' SCOOP

Faster forward travel 111 miles an hour!, a turning radius of only 6'3", the new BUTLER '102' is tops in maneuverability and efficiency.



BIN LEVEL INDICATOR

A new BUTLER development, a truly trouble-free, positive, accurate Bin-level Indicator. Works successfully with a great variety of materials.

OBITUARY

Walter Colton Little, 89, former city engineer of Monterey and Pacific Grove, Calif., died in Oakland recently. He has made the first survey maps of the two seacoast towns.

George P Flaherty, 84, former Lemoore, Calif., city engineer for 25 years, died in San Francisco Dec. 3.

Sherman T. Frantz, 72, formerly widely known as a bridge builder, died Dec. 13 in Niagara Falls, N. Y. Mr. Frantz, who retired as construction superintendent of the American Bridge Co. in 1935 after 40 years' service, erected many bridges in the Buffalo area and seven in Ohio.

Norman A. Huth, 64, city engineer of Visalia, Calif., died recently in that city. A World War I lieutenant in the Engineering Corps, Huth spent 17 years in his public office, and the engineering for the Visalia public library, municipal hospital, sewage disposal plant, airport and street lights.

Walter Clark, 74, civil engineer, died at Los Angeles, Calif., Dec. 17. He was educated at the universities of Utah and California, Columbia University and a university in Berlin. He was associated with Gen. George W. Goethals as an engineer in Colorado River work and also on the Panama Canal dams.

Paul Revere Curtis, 74, civil engineer and great-great grandson of the Revolutionary War hero, Paul Revere, died Dec. 2 in Damariscotta, Me. He was a graduate of Harvard University.

Marshall Henry Hubbs, 62, a civil engineer employed by the State of California, died Nov. 26 at Davis, Calif.

Charles B. Snyder, 74, retired engineer and long superintendent at St. Elizabeth's Hospital, Washington, D. C., died Dec. 1. He was an engineering graduate of Pennsylvania State College, 1899.

Charles E. Saul, 72, of Silver Springs, Md., a retired civil engineer, died Nov. 27 in Bethesda, Md.

Thomas E. Collins, 69, for 40 years city engineer of Elizabeth, N. J., died there Dec. 5. He attended the U. S. Naval Academy, and took a civil engineering degree at Columbia in 1908. He had been engineer of the municipal water department of Elizabeth, and at one time was a member of the New Jersey State Planning Board.

The Tenth of a Series in the interest of more efficient use of steel . . . a vital American resource

LACLEDE *Multi-Rib* Reinforcing Bars

ROUND BARS in all sizes . . . to meet latest ASTM A305 Specifications . . . conveniently marked to make your specification job easier. And, of course, improved Laclede deformations mean uniform reinforcement strength, maximum anchorage—plus a more efficient use of steel by eliminating hooks and shortening embedment lengths.

TABLE OF ASTM A305 SPECIFICATIONS

		NOMINAL DIMENSIONS ROUND SECTIONS			REQUIREMENTS OF DEFORMATIONS		
Bar No. *	Unit Wt. Lbs. Ft.	Diameter-Inches Decimal	Cross Sectional Area Sq. Inches	Perimeter	Max. Avg. Spacing In.	Min. Height Inches	Max. Gap. Inches °
2†	0.167	0.250	0.05	0.785	.. ..	.. .	.. ..
3	0.376	0.375	0.11	1.178	0.262	0.015	0.143
4	0.668	0.500	0.20	1.571	0.350	0.020	0.191
5	1.043	0.625	0.31	1.963	0.437	0.028	0.239
6	1.502	0.750	0.44	2.356	0.526	0.038	0.286
7	2.044	0.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9‡	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10‡	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11‡	5.313	1.410	1.56	4.430	0.987	0.071	0.540

*Bar numbers are based on the number of ⅛ inches in the nominal diameter of the section.
†Bar number 2 is plain rounds only.
‡Bars numbered 9-10-11 correspond to former 1" sq., 1⅛" sq., and 1¼" sq. sizes, and are equivalent to those former standard bar sizes in weights and nominal cross-sectional areas.
°Chord of 12 ½% of Nom. Perimeter.

LACLEDE
Producers of Construction Steel

"For the Best in Reinforcing . . . Specify Laclede"

LACLEDE STEEL COMPANY
St. Louis, Mo.

WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly

Saxe Units **place in position and securely hold together structural parts to be welded.**

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
Air Reduction Canada, Ltd. Montreal 2, Canada

"GUNITE"
NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

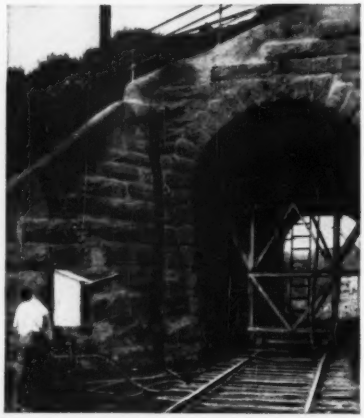
Experienced Personnel
Write for our new 48 page Bulletin
PRESSURE CONCRETE CO.
Gunite Contractors and Engineers
193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St. Chicago 2, Ill.
Liberty Life Bldg. Charlotte, North Carolina

"GUNITING" AND GROUTING SAVES RAILROAD BRIDGE

Pictured here is a type of vital repairing in which we are specialists. It has proven to be a most effective method for filling voids behind tunnel linings and solidifying bridge abutments, piers and arches.

This grade separation between the NYO & W and DL & W railroads was so greatly weakened by heavy traffic that ballast from the upper track sifted through the joints in the masonry. After pointing all joints with "GUNITE," a system of holes was drilled through the masonry. Through these we pumped sand-cement grout, completely filling all voids and joints. This built up the structure to greater than original strength.

Pressure grouting is but one of the operations we have teamed with "GUNITE" for successful repair and construction of many kinds. Bulletin (A) 2400 shows many of them. A request on your letterhead will bring you your copy promptly.



CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE CEMENT GUN

FLOORS CAN BE
SHOCK PROOF!
WITH OR WITHOUT FILL

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

"ARMOURING"
TRADE MARK

THE ORIGINAL STEEL MESH
FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

• Catalog on Request

IRVING SUBWAY GRATING CO., INC.
5063 27th St., Long Island City 1, N. Y.
1863 Tenth St., Oakland 20, Calif.

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
THE HAYWARD CO., 48-50 Church St., N. Y.

LEFAX POCKET SIZE TECHNICAL DATA BOOKS $1. EACH

• Printed on loose leaf, six hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	Radio	Trig-Log Tables
Home Heating	Television & FM	Analytic Chemistry
Illumination	Electricity, AC	Highway Engineering
Electrician's Data	Electricity, DC	Mechanics of Materials
Builder's Data	AC Motors and Generators	Power Trans. Mach'y.
Lumber Data	Transformers	Thermodynamic Tables & Charts
Air Conditioning	Relays, Meters	Phys. & Thermodynamic Data
General Math.	Hydraulics	Phys. & Org. Chemistry
Math. Tables	Surveying	
Physics	Mech. Drawing	
Chemical Tables	Machine Design	
Metals	Machinists Data	
Gen'l. Chemistry	Piping Data	
Reinf. Concrete	Surveying Tables	
Building Constr.	Metallurgy	

• Write for FREE Catalogs (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send $1. for each book, or $5. for any six books listed above, to:

LEFAX, Dept. ER 7 Philadelphia 7, Pa.

Edward A. Crane, Sr., 68, a former civil engineer for the International Harvester Co. and with the Continental Mexican Rubber Co., died in Milwauke, Wis., Nov. 17.

Oscar P. Osthoff, 67, a former construction engineer of Milwaukee, Wis., died Dec. 9 in Indianapolis, Ind. After attending Marquette University, Mr. Osthoff got his civil engineering degree at the University of Wisconsin. In the 1920's he was president of the Osthoff-Peterson Contracting Co. After working for the government, he joined the Indianapolis department of public parks.

Silas S. Riddle, 65, former civil engineer, died in Harrisburg, Pa., recently. He had been serving as manager of the Industrial Relations Bureau of the Pennsylvania Chamber of Commerce. He received his civil engineer's degree from Lafayette in 1909. After several years in engineering work in Philadelphia, he entered newspaper work and later labor relations.

Edward Hugh Bangs, 81, of Riverside, Ill., planning engineer for the Illinois Bell Telephone Co., died Dec. 3 in Berwyn, Ill. He had retired in 1933 after 45 years of service with the telephone company and other affiliates of the American Telephone & Telegraph Co.

Sidney G. Martin, a structural engineer who served as an Army engineer in the first world war, died in Chicago Dec. 14.

Joseph T. Tehan, 64, a former city engineer of Auburn, N. Y., died Dec. 13.

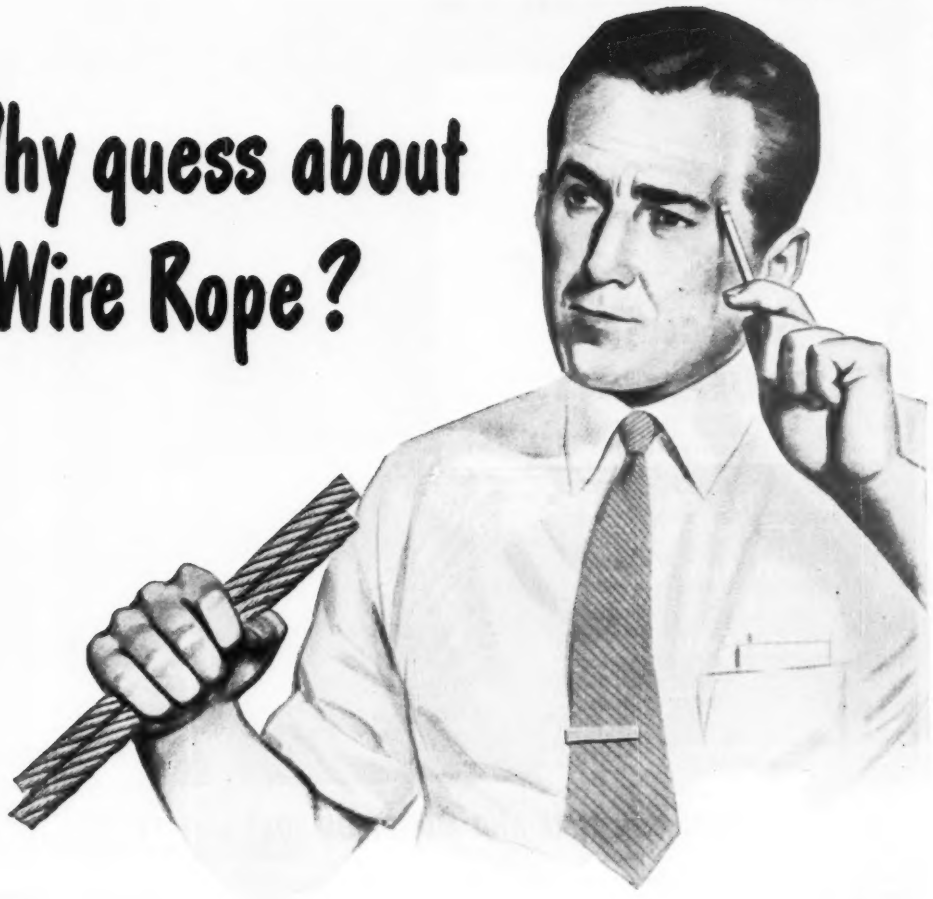
Sparrow E. Purdy, 64, steel and railroad contractor, died in Chicago on Dec. 6. He was head of the Purdy Co., railroad equipment dealers, which he organized five years ago after resigning as president of Hyman-Michaels Co.

John T. Horton, former Tipton, Ind., street commissioner, died Dec. 7 in Flora, Ill.

Ray P. Murphy, Lynchburg, Ohio, former Highland County engineer at Hillsboro, Ohio, died Dec. 11. He served two terms as county engineer, 1924 to 1932.

Clem M. Brooker, 77, died in Dalton, Ga., Dec. 5. For 26 years he was superintendent of construction with E. Elford & Sons, contractors, Columbus, Ohio, during which time he built several bridges. He later was in charge of street paving in Bexley, Ohio, for the government under WPA.

Why guess about Wire Rope?



Let's call this a picture of a man who used to guess about his wire rope. He often guessed wrong. Was never really sure which brand was costing him the most—and the least.

Now he's keeping records. A Bethlehem man showed him the value of knowing what he was actually getting for his rope dollar. Showed him that the true cost of wire rope is the cost per unit of work—per ton-mile, cubic yard of rock moved, etc. Showed him how easily records could help him determine this cost per unit of work.

It's something Bethlehem strongly recommends, for purchase price alone is a false yardstick of rope value and rope economy. Frankly, we welcome any steps that will help users compare brands of rope, for the Bethlehem product is built to give outstanding service at very low cost. This is a fact you can prove to your own satisfaction by keeping a few simple records.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

Rodgers Hydraulic JACKING EQUIPMENT...

- JACKING CYLINDERS (50 TO 600 TONS)
- HAND AND POWER PUMPS
- QUICK COUPLERS
- VALVES AND HOSE

Photo shows two Rodgers 300-Ton double-acting jacking cylinders (operated by Rodgers power-driven hydraulic pumps) jacking 72" compressed concrete pipe. Hose connects cylinders with pump.

SAVES YOU TIME AND MONEY ON JOBS LIKE THESE...

SEND FOR NEW CATALOG

To learn advantages of Rodgers Jacking Cylinders on construction jobs . . . get the new Rodgers Catalog No. 317. It gives full information.

Wherever you need versatile, efficient jacking power on the job — you'll want a Rodgers jack. A complete selection of hydraulic cylinders in various capacities and lengths of ram travel are available — to be used with either hand-operated or power-driven hydraulic pumps.

Cylinders may be operated either singly or as a group for a straight jacking of compressed concrete pipe, corrugated pipe, well casing, etc., or used in the operation of the shield jacking method. Two sizes of quick couplers, 4-way and metering valves, and high pressure hose are available accessories.

Complete specifications, illustrations and suggested uses are included in the new Rodgers Jacking Equipment Catalog.

- JACKING COMPRESSED CONCRETE PIPE
- JACKING CORRUGATED PIPE
- JACKING WELL CASING
- JACKING SHIELD FOR TUNNELING

HYDRAULICS MAKE THE WORLD MOVING

Rodgers Hydraulic, Inc.

7441 WALKER ST., ST. LOUIS PARK, MINNEAPOLIS, MINN.

HYDRAULIC POWER EQUIPMENT

UNIT PRICES BID BY CONTRACTORS

Per capita costs of sewage works in Indiana

New sewage treatment projects in 13 Indiana cities cost from $42.80 to $176.50 per capita, according to figures developed by the State Board of Health, Bureau of Environmental Sanitation, B. A. Poole, director. Three types of plants are represented in this study: 9 activated-sludge, 2 primary treatment, 2 high-rate trickling filter.

• The activated-sludge plants have an average per capita construction cost of $42.08 based on the 1950 census. Based on design populations this average goes down to $31.61. The lowest per capita cost is $28.90 and the highest, $58.20. On design, the range is $24.10 to $56.10 (see table).

The per capita construction costs for the sewers hits an average of $37.84. The cost range is wide with a low of $6.80 and high of $135.60.

These are construction costs. Adding engineering, legal, financing fees and miscellaneous, the total project cost average is pushed up to $97.74. The average is $69.13 on design population. The project costs range between $62.20 and $176.50 per capita. On design they come down to a $41.70 to $162.20 range (see chart).

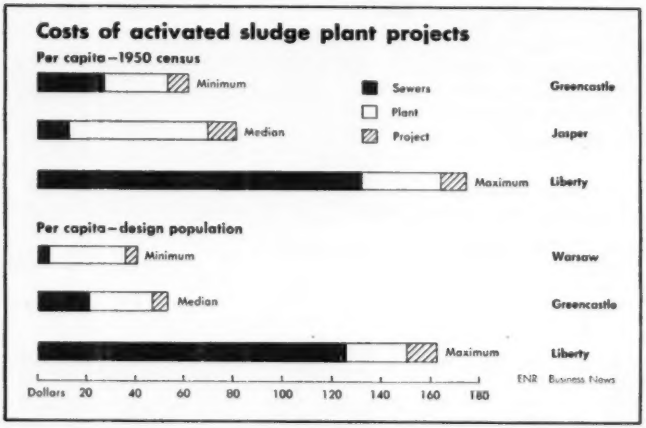
• The per capita costs for the two primary treatment plants are $22.10 and $22.60. Elkhart sewers are $73.40, Madison's are $12.00. Elkhart, however, is the largest city in the survey.

• The high-rate trickling filter plant in Speedway will cost $97.80 per capita while the one in Washington cost only $32.70. The Speedway sewers cost only $21.40 per capita compared to Washington's $58.10.

Some of the towns are planning for tremendous growth, others to meet only their immediate needs. Thus the design populations for the sewage projects ranged from 3.6% to 249.4% greater than actual 1950 populations.

Sheridan, with only 1,966 inhabitants, has a new activated-sludge plant designed for a population equivalent 2½ times its present size. It has a condensed milk company which contributes 55.4% of the sewage.

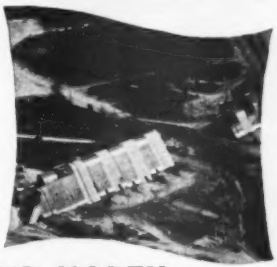
Jasper's sewage works were designed for a population 101.4% greater than now. This is the town that requires individual garbage grinders in the homes and has no garbage collection.



	Population 1950	Design Flow	Design Pop.	% inc. pop.	Cost per Capita—1950 Population Sewers	Plant	Project	Design Population Sewers	Plant	Project	Service charge per mo.
Activated-sludge											
Greencastle	6,856	.8	8,000	16.7	$26.40	$30.00*	$62.20	$22.60	$25.00*	$55.00	$ .75*
Jasper	5,213	1.6	10,500	101.4	13.20	57.70	80.60	6.60	28.70	48.00	.90
Liberty	1,722	.19	1,875	8.8	135.60	28.90	176.50	124.60	26.60	162.20	1.03*
Mishawaka	32,578	8.3	41,000†	24.7	32.70†	30.10†	76.00	26.20†	24.10†	61.00	1.20*
Monticello	3,454	.55	5,000	44.8	47.80	46.30	107.00	33.00	32.00	74.00	1.25
Noblesville	6,363	.81	8,500	29.5	26.20	35.00	70.10	20.20	27.80	54.00	1.50
Rushville	6,754	.90	7,000	3.6	14.00	58.20	82.90	13.30	56.10	80.00	1.60
Sheridan	1,966	.4	6,870‡	249.4	.....	.....	161.80	.....	.....	46.30	1.00
Warsaw	6,589	1.0	10,000‡	51.8	6.80	49.40	62.60	4.50	32.60	41.70	1.00
Average	7,999	.....	10,772	.....	37.84	42.08	97.74	31.38	31.61	69.13	.....
Primary treatment											
Elkhart	35,556	12.0	50,000‡	40.6	73.40‡	22.60‡	112.50	52.10‡	16.00‡	80.00	1.50
Madison	7,485	1.2	10,000‡	33.6	12.00	22.10	42.80	9.00	16.50	32.00	1.00
High-rate trickling filter											
Speedway	5,470	3.0	10,000§	82.8	21.40	97.80†	.....	11.70	53.50†	.....	.....
Washington	10,949	1.7	17,000	55.3	58.10	32.70	115.10	37.40	21.10	74.10	2.00

* Paid quarterly
† Population equivalent
‡ Plant being rebuilt
§ Pop. equivalent 53,620
¶ Pop. equivalent 20,000
# Pop. equivalent 80,000
• Pop. equivalent 15,000
/ Unofficial totals of bids
¤ Engineer's estimate
Δ Pop. equivalent 20,200

use Darex *AEA* concrete!

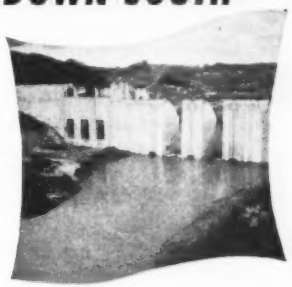


UP NORTH

In Connecticut, Darex AEA concrete in the Mansfield Hollow Dam, Natchaug River, is providing better workability without the use of excess water . . . and will increase durability by increasing resistance to freezing and thawing of New England winters.

In Tennessee, the Darex AEA concrete in the Center Hill Dam, Caney Fork River, provided improved plasticity, reduced bleeding during construction . . . and resists the deteriorating action of prevailing sulphate waters and alkali soils, increasing durability.

DOWN SOUTH



Darex *AEA* is the only catalyzed air entraining agent specifically formulated for making air entrained concrete.

Darex *AEA* is in use everywhere on every type of concrete construction . . . and in ready mix and concrete products plants using every known type of aggregate.

Darex *AEA* is conveniently available in distributor warehouse stocks throughout North and South America and in most foreign countries.

Cement Products Division
Dewey and Almy
Chemical Company
Cambridge 40, Massachusetts
Chicago 38 Montreal 32
DAREX T.M. REG. U.S. PAT. OFF.

HOLDREGE—East Avenue, looking north from intersection with Seventh Avenue. Built 1925. Photos taken in 1926 and 1950.

FREMONT—East Military Avenue, part of the Lincoln Highway, U.S. 30, was built in 1921. Photos were taken in 1922 and 1950.

HASTINGS (below)—West 12th Street, east from Hastings Street. Built in 1926. Photos taken in 1926 and 1950.

Here today—*and still here tomorrow*

that's the story of Nebraska's *CONCRETE* streets

Wherever you go in Nebraska you can see fine old concrete pavements like those pictured here. After serving economically for a quarter of a century and more, they're still good for extra years of ***low-annual-cost*** service.

Nebraska's experience is not unique, for such outstanding service is typical of concrete pavements all over the country. And remember, concrete pavements built today are even better. Public officials, engineers and taxpayers have found that concrete serves better, lasts longer, costs less to maintain. Also, concrete is safer because of its skid-resistant surface and high light reflectance at night.

Send today for your free copy of *"Concrete for Modern Streets."* It is distributed only in the U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A1a-17, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work.

NELIGH (below)—Coe Street, east of Locust. Built in 1920-21. Photos taken in 1922 and 1950.

MINDEN (left)—Minden Avenue, looking north from Fifth Street, was built in 1925. Photos taken in 1926 and 1950.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Ala., Maplesville—B.A. 1/16—Town, WW sys $65,000. Donald Mills, Box 534, Selma, engr.

Fla., Hallendale—B.A. 1/16—City, WW, incl. distribution sys.; elevated tank and tower, wells and appurtenances, water treatment plant. $750,000. Plans deposit $50. Briley-Wild Assocs., 8 North Wild Olive St., Daytona Beach, engrs.

N. Y., Long Beach—B.A. 1/16—City Council at office Maurice J. Fleischman, mgr. City Hall, Contr. 1, developing, constructing water supply well, etc.; Contr. 11, pump house and piping, etc. Plans deposit $15 each. Alexander Potter Assoc., 50 Church St., New York, consult. engrs.; adv. ENR 1/4, CD 5/12.

Ill., McLeansboro—B.A. 1/24—City Council, City Hall, WW and sewerage imprvs., Div. A dam imprvs. Plans deposit $15. Crawford, Murphy & Tilly 400½ E. Adams St., Springfield, consult. engrs. CD 10/20.

Ala., Pine Hill—B.A. 2/6—Town, WW sys. $55,000. Donald Mills, Box 534, Selma, engr.

Mich., Wyoming—Bids Asked—Wyoming Twp., Kenneth F. Jones, Wyoming, masonry water softener plant, equip., Clay Ave. $75,000. Earl Weeber, 356 Houseman Bldg., Grand Rapids, engr.

LOW BIDDERS

Runquist Constr. Co., 2123 Water St., Duluth, Minn. Low Bidder, **$123,427**, excav. and rock for 6 circular concrete reservoirs between 28 and 29 Aves. West and between 8 and 9 Sts., DULUTH, MINN. City Water, Gas & Sewage Disposal Dpt., M. Lubratovich, mgr., A. W. Tews, city engr. Bids Dec. 5.

City Comn., City Hall, bid refused, 1 m.g. water storage tank, ATLANTIC CITY, N. J. L.B. **$149,700.** Will re-advertise CD 12/7, under CA.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. J., Hackensack—B.A. 1/8—City, City Hall, refuse disposal plant alterations (addns., River St.

B. C., Vancouver—B.A. 1/9—Donald Thompson, city clk., City Hall, supply, delivery pumps, motors, electrical and control equipment for city yard pumping station to be constructed in Cambie Yard at 1 Ave. and Crowe St. Plans deposit $10. J. C. Oliver, City Hall, city engr.

▲ **Ill., East St. Louis**—B.A. 1/10—East Side Levee & Sanitary Dist., Dan Foley, pres., 6642 McCasland Ave., trunk relief sewers, Proj. 18, Sects. A, B and C, incl. Sect. A, Mississippi River to gate structures, 5,250 lin. ft. 12½x12½ ft., rein.-con. box and 470 lin. ft. 9x10½ ft. rein.-con. box; Sect. B from gate structure at Gay Ave. to 13 and Illinois Ave., 7,000 lin. ft. 12½x12½ ft. rein.-con. box and Sect. C 13 and Illinois Ave. to 20 and Illinois Ave. to junction with 42 in. station 72/10 inc. 4226 ft. 12½x12½ ft. rein.-con. box and 2,915 lin. ft. 11x12 ft., rein.-con. box sewers, together with appurtenances, etc. in each section, $4,000,000. Bids 11/15 rejected. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis 3, Mo., engrs. CD 10/17.

▲ **Ill., East St. Louis**—B.A. 1/10—City, John T. Connors, mayor, City Hall, Missouri Ave. at Main St., trunk and lateral sanitary sewers Incl. Sect. 1, trunk B, 8,140 lin. ft. rein.-con. box sewer from 8x10 ft. to 11x12½ ft. and 3,100 lin. ft. 72 in. and less, appurtenances, etc.; Sec. 2, Trunk A, 5,800 lin. ft. rein.-con. box 6x7 ft. to 9x10½ ft., etc.; Sec. 3, A, laterals 3,790 ft. 6 ft. 6 in x 8 ft. 4 in., rein.-con. box 8x10½ ft. and 30,000 lin. ft. 8 to 78-in. sewers; Sect. 5C trunk incl. 6,360 ft., rein.-con. box 6x7 ft. to 8x10 ft.; Sect. 6C laterals, 7,725 ft. 8- to 72-in. sewers; Sect. 7E, 6,900 lin. ft. rein.-con. box 6x7 ft. 7x9 ft. and 39,000 lin. ft. 8- to 78-in. sewers; Sect. 8, Edgemont and Oak Park and Lansdowne Districts, 180,000 lin. ft. overall 6- to 36-in. sewers lift station, etc. $7,000,000. Bids 11/15 rejected. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis 3, Mo., engrs. CD 10/17.

N. Y., Port Richmond—B.A. 1/10—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1, Port Richmond intercepting sewers, Sect. No. 1-Port Richmond Sewage Treatment Works, Richmond Boro. Plans deposit $25. CD 11/2/44.

R. I., Pawtucket—B.A. 1/10—At office Franklyn A. Adams, State Planning Asst., State House, Providence, construct Taft St.-Pleasant St. Branch interceper. Sec. B, 615 ft. 54 in. precast concrete sewer, 4,000 ft. 42 in. precast concrete sewer incl. 1,300 ft. tunnel and appurtenant work. Plans deposit $25. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

Ind., Winona Lake—B.A. 1/11—Bd. Trustees, Winona Lake, sewage disposal plant and sanitary sewers in south part of town. Plans deposit $25. Boyd E. Phelps, Inc., 1000 Washington St., Michigan City, engr. CD 9/22.

Tex., Carrizo Springs—B.A. 1/12—City, sewage treatment plant. $75,000. Plans deposit $25. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, engrs. CD 3/3.

Mo., Berkeley City (St. Louis 21, P.O.)—B.A. 1/15—City, Wm. Bangert, mayor, City Hall, Airport Rd. and Helen Ave., city wide sanitary and storm water trunk sys., sanitary sewers and second sewage disposal plant, equip., etc. $500,000. George W. Kropp, 8025 Forsythe Bldg., Clayton, St. Louis, Zone 25, engr. CD 7/25.

Tex., Carthage—B.A. 1/15—City, Contr. D, sewage treatment plant, $90,000; Contr. C, 6- to 24-in. pipe sanitary sewer lines, $65,000. Plans deposit $25 each. Wisenbaker, Fix & Assoc., 1415 N. Dixie St., Tyler, engrs. CD 9/18.

Calif., Monterey—B.A. 1/16—City, City Hall, intercepting sewer lines and force main; primary sewage treatment plant and outfall line. Approx. $60,000. Plans deposit $30. Howard D. Severance, City Hall, Monterey, and Harry N. Jenks, 63 Crescent Dr., Palo Alto, engrs. CD 5/17.

LOW BIDDERS

R. H. Wright & Sons, P. O. Box 781, Fort Lauderdale, Low Bidder, **$125,868**, storm sewers Rd. 15 and 500, St. Cloud, Osceola Co., State Proj. Job. 9203-105, FLORIDA, State Hy. Dpt., Tallahassee.

CONTRACTS AWARDED

Banta Constr. Co., 1646 W. Main St., Zone 4, Contract Awarded. **$220,107.** Est. $235,465. Storm sewer, Contr. 2, in Carverdale Addn. OKLAHOMA CITY, OKLA. City, City Hall, Zone 2. Hudgins, Thompson & Ball, 1100 W. Main St., engrs. CD 5/15.

BRIDGES

SOON LETS CONTRACT

Neb., Omaha—North Omaha Bridge Assoc., 2912 Ames Ave., soon lets contract, approaches, foundations, superstructure erection construction bridge over Missouri River in North Omaha. **$1,750,000.** Harrington & Cortelyou, Dwight Bldg., Kansas City, Mo., engrs. CD 11/22.

LOW BIDDERS

▲ Guy F. Atkinson Co., 22233 South Santa Fe Ave., Wilmington, Low Bidder, **$1,575,844.** 700 ft. span Anaheim St. Bridge 6-12 ft. lanes, LONG BEACH, CALIF. City Harbor Dpt., 1333 El Embarcadero St. Bids Dec. 19. CD 11/30.

Cleary Bros. Constr. Co., West Palm Beach, Low Bidder, **$459,733** and **$89,500** respectively, constr. 1,216 ft. concrete bridge on concrete piers and concrete pile bents, Alafia River Bridge and approaches ocala rock base, surf. tr., Rd. 45, Federal Aid Proj. F-011-2(26). Job. No. 1006-203, Hillsborough Co. and constr. 405 ft. bridge consisting of precast concrete slab superstructure on concrete piling, grading, bridges approaches State Rd. S-771, at Placida, Fed. Aid Proj. S-275 (1), Charlotte Co.***Duval Eng. & Constr. Co., 1746 E. Adams St., Jacksonville, $722,136, ocala lime-rock base, shell base, bit., bridge consisting of five 40-foot and seven 60-foot I-beam spans on 18 in. square precast concrete pile bents electrically operated double leaf trunnion type bascul span, Road 105, approaches and bridge over Sister's Creek, Sta. Proj. Job. 7225-107, Duval Co.***Goodwin & Murphy Troy, Ala., **$383,927** reconstr. trusses using open grid flooring; constr. thirty-five 30 ft. concrete deck girder spans on 18 in. square precast concrete pile bents, constr. two detour bridge with fill approaches Road 10, State Proj. Job 6101-106 Holmes and Washington Counties, FLORIDA. State Hy. Dpt., Tallahassee. CD 11/24 and CD 11/29.

A. Olson Constr. Co., Waterloo, Low Bidder, **$107,166,** two 100x24 ft. span steel deck girder bridge on County Trunk Road H over Iowa River in Sect. 26-84-18, S-353 (2), Marshall Co.***Brogan Constr. Co., 307 Masonic Temple Bldg., Des Moines, **$93,949,** 292x24 ft. continuous I-beam bridge on County Trunk Road S over Big Cedar River between Sect. 35 and 36-99-18, Mitchell Co.***Christensen Bros., Sioux City, **$139,436,** 570x20 ft. continuous I-beam bridge on County Trunk Road S over Rock River in Sect. 16-96-47 S-1457 (1), Sioux Co.***Amos Melberg, 316 19 St. S.E., Cedar Rapids, Div. 1, **$65,297** 50x30 ft. I-beam bridge also 200x26 ft. continuous I-beam bridge on Iowa 1 over Cedar Creek in Sect. 37-75-8 and over Crooked Creek in Sect. 24-75-8, F-71 (7) Washington Co., IOWA, State Hy. Comn., Ames. Bids Dec. 19. CD 12/6.

Sanford Constr. Co., Box 427, Sanford, Low Bidder, **$60,183,** est. $25,000-$50,000, structures 18.5 mi. Proj. 2-204, S-421 (1), Craven and Beaufort Counties***F. A. Triplett, Inc., Box 297, Chester, S. C., **$124,825,** est. $100,000-$125,000, structures 1.12 mi. Proj. 3448, U-667 (4), Cumberland Co.; **$125,-595,** est. $100,000-$125,000, structures 12.75 mi. U.S. 117, Proj. 3781, F-81 (7), Pender and New Hanover Counties***Wilson Constr. Co., Inc., Box 603, Salisbury, **$80,471,** est. $75,000-$100,000, structures 12.78 mi. U.S. 70 relocation, Proj., 4826, Wake and Johnston Counties***received no bids Dec. 19, structures 24.4 mi. U.S. 301, Proj. 1425, Edgecombe and Halifax Counties. NORTH CAROLINA, State Hy. & Pub. Wks. Comn., Raleigh, Bids Dec. 19, CD 12/11, under Streets and Roads.

STREETS AND ROADS

LOW BIDDERS

Gardner Constr. Co., Glenwood Springs, Low Bidder. **$315,191.** Est. $296,315. grading, structures, surf. prime coat 2.828 mi. State Hy. 4, Colo. Proj. F 001-1 (1), Mesa Co., COLORADO. State Hy. Dpt., Denver. CD 12/5.

Jonn A. Benton Constr. Co., 301 20 S. St., St. Petersburg, Low Bidder, **$271,738** and **$94,339** respectively rock base, surf. tr. drainage structures State Rds. 80 and 25, between point in Clewiston near the intersection, Fed. Aid Proj. F-019-2 (1), Job 0703-201 Hendry Co. and ocala rock base, surf. tr. erecting sectional plate metal pipe-arch culvert, contr. other drainage structures State Rd. S0661, between Arcadia and the Hardee Co. line, Fed. Aid Proj. S-278 (1), Job 0451-250, DeSoto Co.***J. W. Conner & Sons Inc., P.O. Box 2522, Tampa. **$159,530.** sand-asph. hot mix pavement, small drainage structures State Rd. 782, between State Rd. 45 and State Rd. 72, Fed. Aid Proj. S-243 (1), Job No. 1753-251, Sarasota Co.***B. B. McCormick & Sons, Inc., P.O. Box 248, Jacksonville Beach, **$163,075,** ocala rock base, with bit., drainage structures, State Rd. 206, between East Palatka and point approx. 3.6 mi. northeast, Fed. Aid Proj. S-22(5), Job No. 7606-202, Putnam Co.***Troup Bros. Inc., 4151 S. Dixie Hy., Miami, **$63,679,** reworking, wid'n., existing rock base surf. treated pavement, bit. retread (road mix) surf. with mineral seal, Rd. 5, from White Street to Roosevelt Blvd. along Flagler Avenue in Key West, State Proj. Job 9001-150, Monroe Co.

Caddell & Jackson, P.O. Box 2217 Jacksonville, **$64,139,** sand bit. road mix on existing graded road bed, Rd. 206 from State Rd. 13 to Six Miles East, State Proj. Job 7809-104, St. Johns Co.***, B. Conel, DeFuniak Springs, **$104,512,** sand clay base with bit., one double 9x9 ft. concrete box culvert other drainage structures, State Rd. S-2, between State Rd. 83 and Jackson' Still Fed. Aid Proj. S-213 (2), Job 6052-250 Walton Co.***Coggin & Deermont, Chipley, **$74,008,** sand clay base with bit. drainage structures State Rd. S-284, between Hinsons Cross Roads and point approx. 5 mi. south, Fed. Aid Proj. S-328n (1), Job 6152-250, Washington Co.***Beacon Supply Co., Port St. Joe, **$118,678,** sand clay base, bit. constr. one 350 ft. concrete steel bridge on treated timber piling, State Rd. S-167, between State Rd. 276 and point approx. 5 mi. southwest Fed. Aid Proj. Nos. S-314 (1) and S-315 (1), Job 5352-250 Jackson Co.***R. H. Strickland, Quincy, **$104,213,** sand clay base with bit., 1 concrete box culvert bridge, small drainage structures, State Rd. S-379, between Little Gulley Creek and point approx. 5 mi. north, Fed. Aid Proj. S-412 (2), Job 5651-250, Liberty Co.

W. L. Cobb Constr. Co., P.O. Box 977, Tampa, **$287,548,** grading, stabilizing, constr. ocala rock base with asph.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

▲	Federal Government
*	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

How Does Calcium Chloride *Improve* COLD WEATHER CONCRETE?

"The Effects of Calcium Chloride on Portland Cement" is a semi-technical book that clearly presents the facts on the use of Calcium Chloride. It is filled with graphs, tables, charts and contains much material not heretofore available. This information will be of great interest to contractors, architects, engineers, plant operators and men in allied fields. For your copy, write on your company letterhead to the address below . . . there is no obligation.

SOLVAY Calcium Chloride

- CUTS DELAYS
- SPEEDS STRENGTH
- ADDS EXTRA SAFETY

SOLVAY SALES DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street New York 6, N. Y.

surf. course State Rds. 600 and 15, between the North City Limits of Deland and point approx. 1 mi. north and from the intersection of Roads 600 and 15 to point approx. 0.3 mi. northeast, Fed. Aid Projs. Nos. F-010-1 (2), F-021-1 (2), Jobs 7904-203, 7905-202 and State Proj., Job. 7906-109, Volusia Co.*** Cone Bros. Constr. Co., P.O. Box 1301, Tampa, **$145,919**, reworking, wid'n. section of an existing rock base surf. treated pavement, constr. new rock base on the other sections and applying hot sand asph. sur. also grading and drainage structures, Rd. 52 from Road No. S-581 to San Antonio State Proj. Job 1412-107, Pasco Co.***J. D. Manly Constr. Co., Leesburg, **$170,367**, ocala rock base with bit. Rd. 19 from Pitman to State Rd. 40, State Projs. Jobs No. 1119-102 and 3609-101, Lake and Marion Counties***Brimson Constr. Co., P.O. Box 2209, Tampa, **$98,991**, local rock base with bit. curbs, and gutters, Rd. 29 in town of Everglades State Proj. Job 0307-105, Collier Co.***Faulk & Coleman Constr. Co., 4 Points Woodville Hy., Tallahassee, **$177,632**, wid'n. hot sand asph. b. conc. State Rd. 20 between Mile Posts 9.9 and 19.9 west of Tallahassee, State Proj. Job 5507-107, between Mile Posts 9.9 and 19.9 west of Tallahassee, Leon Co., FLORIDA. State Hy. Dpt., Tallahassee.

Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Low Bidder, **$78,871**, paving, grading 0.497 mi. primary road from Iowa 148 west into Gravity, FN-977. Taylor Co.***Roverud Constr. Co., Spring Grove, Minn., **$145,093**, grading 3.988 mi. Iowa 325 from Spillville easterly to U.S. 52, F-983 (1), Winneshiek Co.***Kaser Constr. Co., 219 5 St., West Des Moines, **$61,805**, stabilized base and bit. 1.187 mi. Iowa 108 out of Delta south to Iowa 92, F-961 (2), Keokuk Co.***Iowa Road Bldg. Co., Fairmont, Minn., bit. treated soil aggregate base and single course bit. 4.009 mi. Iowa 91 from Ledyard easterly to U.S. 169, Kossuth Co.***Cameron Joyce & Co., Keokuk, **$100,081**, rolled stone base and bit. 3.92 mi. Iowa 78 out of Morning Sun east to U.S. 61, F-352 (4), Louisia Co., IOWA, State Hy. Comm., Ames. Bids Dec. 19. CD 12/6.

R. G. Watkins & Inc., Mill Yard, Amesbury, Mass., Lcw. Bidder, **$149,396**, surf. treated grav. 1.958 mi. U.S. 302 in Harts location, Proj. S 2 (4), Concord, NEW HAMPSHIRE. Dpt. P. Wks. & Highways, Concord. Bids Dec. 15. CD 12/8.

▲ Barnhill & Long, Inc., Tarboro, Low Bidder, **$122,975**, est. $75,000-$100,000. STBC, b. conc, binder and surf. course and structures 0.87 mi. N. C. Route 95 Proj. No. 1253, F-283 (3), Edgecombe Co.*** Nello L. Teer Co., Box 1131, Durham, **$543,382** subgrade reinforcing, b. conc, binder and surf. course 24.4 mi. U. S. 301 Proj. 1425, Edgecombe and Halifax Counties***Dickerson, Inc., Box 448, Monroe, **$296,742**, est. $300,000, traffic bound macad. and bit. surf. tr. or b. conc. binder course 24.57 mi. N.C. 43 Proj. 1883 Pitt and Craven Counties; **$132,987**, est. $100,000-$125,000, STBC 17.1 mi. Proj. 1-9-1-208, Bertie Co.; **$80,144**, est $50,000-$75,000. STBC, sand asp. or b. conc. surf. course 5.22 mi. Proj. 3-205, S-418 (1) Columbus Co.***J. Hill Constr. Co., Box 122, Washington, **$185,261**, est. $125,000-$150,000. grading 18.5 mi. Proj. 2.204, S-421 (1), Craven and Beaufort Counties***Zeigler-Cline Constr. Co., Box 386, Fayetteville, **$247,082**, est. $225,000-$250,000. STBC, b. conc. binder and surf. course 1.12 mi. Proj. 3448, U-677 (4), Cumberland Co.*** E. H. Hines Constr. Co., Box 924, Greenwood S. C., **$505,404**, est $300,000-$400,000. traffic bound macad., b. conc. binder and surf. course 12.75 mi. U. S. 117, Proj. 3781, F-81 (7), Pender and New Hanover Counties***C. C. Mangum, 3016 Hillsboro St., Raleigh, **$154,519**, est. $225,000-$300,000, grading 12.78 mi. U. S. 70 relocation, Proj. 4825, Wake and Johnston Counties***Shepherd Constr. Co. Inc., Box 3299, Station F, Atlanta, Ga., **$96,213**, est. $100,000-$125,000, sand asph. or b. conc. surf. course 23.98 mi. Proj. 3-9-31-222, Code 5900-311, 346 and 331***Wayne Eng. & Constr. Co. Inc., Box 254, Mount Olive, **$141,491**, est. $125,000-$150,000. STBC bit. surf. tr. or sand asph. or b. conc. surf. course 14.6 mi. Proj. 14-9-39-208-217, NORTH CAROLINA, State Hy. & Pub. Wks. Comm., Raleigh. Bids Dec. 19. CD 12/11.

Ames & Webb, Inc., 3145 Broad Creek Rd., Norfolk, Low Bidder, **$171,916**, 1.32 mi. four-lane divided concrete hy. continuing the dual Waterworks Road toward Little Creek U. S. 13, Princess Anne Co.*** W. H. Armstrong & Co., 1336 31St St. N. W. Wash. D. C., **$334,757**, four-lane divided constr. on Glebe Rd. between the new Fairfax Dr. and Randolph St., eliminating a bad intersection with Wilson Blvd., Route 120, Arlington Co.***W. H. Scott, Franklin, **$126,995**, remodeling intersection Routes 460 and Alt. 301 incl building a mile of heavy-duty highway eastward, Petersburg City and Prince George Co. ***John A. Archer & Son, Wytheville, **$71,801**, wid'n. and reconstruction 1.82 mi. Route 39, near West Virginia line, Bath Co.***W. E. Graham & Sons, Cleveland, N. C. **$224,928**, 2.49 mi. new construction designed to continue four-lane divided highway south from Roanoke to Boones Mill, U. S. 220 Roanoke and Franklin Counties, VIRGINIA State Hy. Dpt., Richmond, Bids Dec. 19. CD 12/1.

† U. S. Eng., 628 Pittock Block, Portland, Zone 5, rejected bids Oct. 5, clearing Parcel "M", Buggs Island Reservoir and Project, Roanoke River, CIVENG 44-110-51-8, VIRGINIA and NORTH CAROLINA. Will re-advertise. CD 9/1.

CONTRACTS AWARDED

Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La., Contract Awarded, **$145,347**, c. conc. with sub-surface drainage, curbing, etc., METAIRIE, LA. Jefferson Parish Police Jury, Court House Bldg. Bids 11/8, awarded 12/13. CD 11/15.

Wilmoth Paving Co., First and P Sts. S.E., Wash., D. C. Contract Awarded, **$765,832**, grav. surf. 1.732 mi. along State Rte. 97, divided hy. along Georgia Ave., Contr. M 345-4-315, F. A. Proj. U 152 (3), Montgomery Co., MARYLAND. State Rds. Comn., Baltimore, Zone 2. Bids Oct. 24, awarded Dec. 15. CD 10/30, under LB.

▲ Latrobe Road Constr. Inc., P.O. Box 150, Latrobe, Contract Awarded, **$2,801,332**, Schedule 1, covers all pavement—31.86 mi. of three and four-lane divided highway to be constructed in both counties; Schedule 2, bridge constr.; 3 span concrete deck continuous I-beam bridge over Stony Run; 5 span continuous steel truss bridge over the Conemaugh River and 6-span concrete deck I-beam bridge over Pennsylvania R.R. tracks; Schedule 3 covers construction of the project as a whole, Westmoreland and Indiana Counties, PENNSYLVANIA. State Hy. Dpt., Harrisburg. Bids Dec. 8. CD 12/12, under LB.

Johnson Constr. Co., 709 Wall Ave., Ogden, Contract Awarded, **$100,779**. Est. $121,607, 2 in. road mixed bit. roadway 5.061 mi. between Trenton and Newton, FAP No. S-288 (2), Cache Co.***L. A. Young Constr. Co., Richfield, Contract Awarded, **$86,929**. Est. $95,081, 2 in. road mixed bit. road and timber bridge 4.593 mi. on State Hy. between Otter Creek Reservoir and Antimony, FASP No. S-170 (4), Piute and Garfield Counties, UTAH, State Road Comn., State Capitol, Sale Lake City. CD 12/13.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Illinois**—B.A. About 1/9—U. S. Eng., 834 U. S. Court House and Custom House, St. Louis, Mo., 14,350 lin. ft. earthen levee, Proj. Item IV-A Perry County Levee Districts 1, 2 and 3, Perry Co., along west bank Mississippi River opposite approx. miles 100.3 to 103.0 on Mississippi River above mouth of Ohio River, Inv. No. CIVENG-23-065-51-38.

†**Missouri**—B.A. On or About 1/9—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 8,425 lin. ft. relief wells, well pits, performance of pumping tests, Levee Unit 488-L, along left bank of Missouri River, near Forbes, in Holt Co., CIVENG 23-028-51-56.

† **Missouri**—B.A. 1/9—U. S. Eng., 834 U. S. Court House and Custom House, 1114 Market St., St. Louis, Zone 1, construct levees, Project Item I V-A Perry County Levee Districts 1, 2 and 3, Perry Co., involving approx. 14,350 lin. ft. earthen levees with 840,000 cu. yd. earth, clearing, grubbing, etc., CIVENG 23-065-51-38. CD 6/1/44.

† **Missouri**—B.A. 1/9—U. S. Eng., 601 Davidson Bldg., Kansas City, pressure relief well sys., Levee Unit 488-L along left bank of Missouri River in Holt Co., near Forbes, CIVENG 23-028-51-56. CD 12/8.

B. C., New Westminister—B.A. 1/10—Dpt. P.' Wks., Hunter Bldg., Ottawa, Ont., Imprv. (Kirkland Island Channel, Maintenance) Fraser River, Approx. $100,000. Plans deposit $25. R. Blais, c/o owner, engr.

† **Georgia and South Carolina**—B.A. About 1/11—U. S. Eng., Post Office Bldg., Savannah, Ga., clearing reservoir, Group IV, Clark Hill Proj., Savannah River, Serial No. CIVENG-09-133-51-35. CD 1/8/47.

† **North Dakota**—B.A. About 1/11—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn., channel clearing and snagging, Stage No. 2, Tongue River. Inv. No. CIVENG 21-018-51-31.

Arkansas—B.A. 1/11—U. S. Eng., P.O. Box 97, Memphis, 1, Tenn., placing approx. 880,000 cu. yd. earthwork, R.S. enlargement, L.S. enlargement and roadway embankment. Approx. Levee Station 186/0-191/0. Levee Item No. R-692, Bisroe, along right bank of Mississippi River, Lee Co. beginning at point on levee approx. 8 mi. southeast of Hughes, exten. down levee for distance of approx. 5 miles, in Lower St. Francis Levee Dist., Serial No. CIVENG-40-041-51-67.

† **Georgia and South Carolina**—B.A. 1/11—U. S. Eng., Post Office Bldg., Savannah, Ga., clearing reservoir, Group IV, Clark Hill Proj. Savannah River, Lincoln, Wilkes and Elberton Counties, Ga., and McCormick and Abbeville Counties, S. C., Serial No. CIVENG-09-133-51-35. Extended date. CD 11/28.

† **Louisiana**—B.A. 1/11—U.S. Eng., foot of Prytania St., New Orleans, Zone 9, pump station at Station 25 plus 05 of New Pineville Levee on left bank of Red River at Pineville, Rapides Parish, CIVENG 16-047-51-132.

† **Missouri**—B.A. 1/11—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., construct Levee Unit 448-443-L, Cloverdale Drain Sect., approx. 8 mi. southwest of St. Joseph, Serial No. CIVENG 23-028-51-58. CD 12/13.

Ore., McMinnville—B.A. 1/11—City, City Hall, increase heights of water works dam 23 ft. and other imprvs. Plans deposit $20. Stevens & Koon, Spalding Bldg., Portland, engrs. CD 8/2/45.

† **Missouri**—B.A. On Or About 1/12—U. S. Eng., 601 Davidson Bldg., Kansas City, Zone 8, constr. Levee Unit 448-443-L, Cloverdale Drain Sect., located 8 mi. southwest of St. Joseph, CIVENG 23-028-51-58.

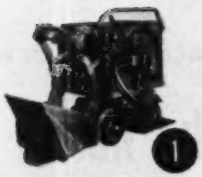
† **Alabama**—B.A. 1/15—U. S. Eng., P. O. Box 1169, Mobile, constr. lock and dam on Warrior, Black Warrior and Tombigbee Rivers near Demopolis, Marengo Co., CIVENG-01-076-51-7. Plans deposit $50. CD 11/24/43.

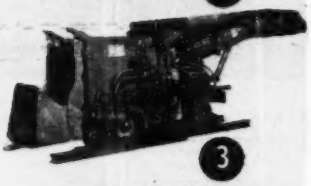
† **Arkansas**—B.A. 1/15—U. S. Eng., P. O. Box 60, Vicksburg, Miss., pile dike construction, Item D-75.0-L, Arkansas River, King's Bayou Serial No. CIVENG—22-052-51-104. CD 12/24/43.

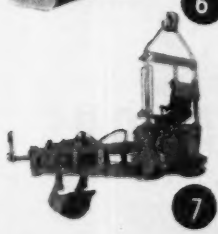
(Continued on page 79)

LOADING ROCK

FASTER . . . CHEAPER







Tunnel drivers used to estimate 2½ to 3 feet of tunnel width for a man. This rapid calculation told Mr. Tunnel Driver how many men could work with shovels in the face at one time. A good worker could load 1½ cubic yards per hour.

Modern Tunnel drivers estimate the size of their heading for the largest Eimco RockerShovel they can use. They know the capacity of RockerShovels. The smallest (Model 12B) will load 1 cubic yard or more per minute (as much as 45 men).

RockerShovels give the man a longer, stronger arm. He does more work yet he goes home without physical strain.

Eimco tunnel loading equipment is fast, economical and dependable. Air, Electric, Gasoline and Diesel powered models are available. Check with Eimco before buying loading equipment

1. Model 12B, smallest RockerShovel. Loads 1 to 2 tons per minute. 5'6" headroom required. Bulletin L1010.
2. Model 21, medium size tunnels. Loads 2 to 3 tons per minute. Air or electric power. Bulletin L1011.
3. Model 40, for high speed loading. 3 to 5 tons per minute. Track gauge from 24" to standard railroad. Bulletin L1009.
4. Model 15, transport model. A self-loading truck. Gasoline or electric power. Bulletin L1013.
5. The 102 RockerShovel crawler mounted. 3 to 5 yards per minute. Bulletin L1023.
6. The 104 RockerShovel crawler mounted. 6 to 8 yards per minute. Bulletin L1019.
7. Model 17. The shaft mucker for large shafts. Write for information.

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES . . . SALT LAKE CITY 8, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK, 51-52 SOUTH STREET • CHICAGO, 3319 SOUTH WALLACE STREET
BIRMINGHAM, ALA., 3140 FAYETTE AVE. • DULUTH, MINN., 216 E. SUPERIOR ST.
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIFORNIA, P. O. BOX 240
KELLOGG, IDAHO, 315 MAPLE STREET

AFFILIATED COMPANIES: SOCIETE EIMCO, PARIS, FRANCE
EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

THIS MAN WOULDN'T NEGLECT

A MACHINE IN HIS PLANT

...yet he hasn't had a Chest X-Ray!

He checks every piece of mechanical equipment he owns for wear, lubrication, efficiency.

Yet he fails to take the simple precaution of a Chest X-Ray to make sure he does not have tuberculosis. *Not because he's opposed to the X-Ray. Simply because he is not sufficiently informed—or just hasn't taken the time and trouble, or does not realize the seriousness of the problem.*

A Chest X-Ray is the first step toward detecting tuberculosis in its early stages. And in its early stages it can be cured with the least loss of time from work.

So, if you're the man above, that one simple reason should make you get your Chest X-Ray—*today*. But listen, see how serious this really is:

Between the ages of 15 and 34, tuberculosis leads all other diseases as a cause of death—although at no age are you safe from TB. Yet, if everyone does his part by getting a Chest X-Ray periodically, and the majority of cases thus discovered are followed up, we can eliminate TB entirely as a public health hazard!

Will you do your part today? Get a Chest X-Ray. It may mean your life!

A PUBLIC SERVICE PROJECT ★ THE ADVERTISING COUNCIL ★

Published in the public interest by:

McGRAW-HILL PUBLICATIONS

(Continued from page 76)

Ill., Aurora—B.A. 1/15—City, City Hall, dam across Fox River, $194,000. CD 9/11.

† California—B.A. 1/16—U. S. Eng., 1209 B St., Sacramento, core drilling and addn. abutment excav. for Folsom Reservoir Proj., Spec. 04-167-5137.

† Texas—B.A. 1/16—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, reservoir clearing, completion Benbrook Dam and Reservois, Clear Fork, Trinity River, Tarrant Co., in the reservoir area of Benbrook Dam near community of Benbrook and approx. 12 mi. southwest of the city of Fort Worth, CIVENG-41-443-51-28. Plans deposit $10. CD 6/9/44 and 12/2/44.

† Washington—B.A. 1/16—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Othello, fixed-wheel gate, incl. rest beam, conveyor chair, lever for the headworks, Portholes East Canal, Columbia Basin Proj. Spec. DS-32o3. L. N. McClellan, ch. engr.

† Louisiana—B.A. 1/17—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, timber guide walls for Berwick Lock on west side of Berwick Bay in St. Mary Parish, CIVENG 16-047-51-133.

† Fla., Mayport—B.A. 1/23—Dpt. Navy, Bureau Yards & Docks, Arlington, Va., dredging turning basin entrance channel and river at Mayport Station Carrier Base, NOY 23817, Spec. 26145. Plans deposit $10. CD 3/30/45.

LOW BIDDERS

L. P. Davis Constr. Co., Box 481, Chalmette, Low Bidder, $82,730, approx. 672,600 cu. yd. channel excav., LOUISIANA, Livingston Parish Police Jury, Livingston. Bids Dec. 13. CD 11/29.

† U. S. Eng., 925 New Federal Bldg., Pittsburgh, Pa., rejected bids Nov. 9, altering river pumping station and sewers, Morgantown Ord. Works, CIVENG-36-058-15-37, WEST VIRGINIA. CD 11/2.

AIRPORTS

BIDS ASKED

† N. C., Cherry Point—RUNWAY—B.A. 1/9—At office John J. Albers, Commander, (CEC), U.S.N., Resident Officer-in-Charge of Construction, Marine Corps Air Station, Cherry Point, furnishing, laying on the subsided area of Runway 32, approx. 1,400 tons hot mixed hot laid sand asph. mixture, incl tack coats, compacted to indicated contours, at the Marine Corps Air Station. Spec. 26054. Plans deposit $10.

Fla., Jacksonville—INTENSITY RUNWAY LIGHTS—B.A. 1/11—City, installing high intensity runway lights at Imeson Airport, Spec. L 818. Plans deposit $10, Engineer-Manager of Airports, 920 Main St., Zone 2, engr. CD 1/10/45.

LATIN AMERICA

Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, U. S. A. Contract Awarded, $15,000,000. reconstruct 350 mi. Venezuelan National Ry., VENEZUELA, Government of Venezuela, Caracas. CD 1/31/47.

PUBLIC BUILDINGS

BIDS ASKED

N. J., Ship Bottom—SCHOOL—B.A. 1/8—Long Beach Island Bd. Educ., Ship Bottom, school. $325,000. Radey & MacNelly, 8 and Market Sts., Camden, archts. CD 10/23.

† Colorado—TURBINE—B.A. 1/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnishing hydraulic turbine for Flatiron Power Plant, Colorado-Big Thompson Project, Spec. DS-3251. Michael W. Straus, comr.

Ia., Keosauqua—POWER PLANT—B.A. 1/9—City, power plant exten., imprvs., wiring, cable distribution. Harold Hoskins & Assocs., 231 N. 11 St., Lincoln, Neb., engrs. CD 2/19/48.

Kan., Johnson—SCHOOL—B.A. 1/9—Bd. Educ., school, $300,000. Hibbs & Robinson, 519 S. Broadway, Wichita, archts. CD 6/13.

† Md., Aberdeen—GYMNASIUM—B.A. 1/9—U.S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., gymnasium, roads, walks and utilities for Aberdeen Proving Grounds, $275,000. Bids 12/22 rejected. CD 12/7.

† Md., Fort George G. Meade—LIBRARY—B.A. 1/9—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., library, Eng. 49-080-51-44-(34).

† Mich., Dearborn—BOILER HOUSE EQUIPMENT—B.A. 1/9—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., boiler plant equip. in Boiler House Bldg. 10, and water supply addn. for Veterans Admin. Hospital, Spec. 50173. CD 12/19/45.

Pa., Upper Darby—GARAGE, etc.—B.A. 1/9—Upper Darby School Bd., bus garage and maintenance bldg. $82,000. Gravell & Duncan, 1700 Walnut St., Phila., engrs. Baader Young & Schultze, 1500 Walnut St., Phila. archts.

Tenn., Pulaski—HOUSING—B.A. About 1/10-Pulaski Housing Auth., Pulaski, 75 housing units. $700,000. CD 10/13.

† Wash., Arlington—BARRACKS, etc.—B.A. 1/16—Pub. Wks. Officer, 13th Naval Dist. 1611 W. Wheeler St., Seattle, 30x202 ft. and 30x81 ft., barracks and

FASTER more satisfactory Material Handling at a SAVING!

When You Use a

Sauerman Machine

with one-man control

Whatever your material—ore, coal, boulders, sand, gravel, clay—you can move it fast and efficiently with a long range SAUERMAN machine of either cableway or scraper type—at a great saving in cost. Any mechanic can operate it. Upkeep is simple. Machine is flexible; range is easily extended. Sturdy design and construction for long, dependable service. Electric, gasoline, diesel or steam power.

The picture shows a mobile Sauerman Power Scraper unit, often termed a Tower Excavator, digging a basin 350 ft. wide and 1400 ft. long. The bucket rides up a ramp attached to the head-tower and dumps the spoil into cars. The cu. yd. bucket moves as much as 200 cu. yd. an hour.

Get this Useful Booklet—Examples of all kinds of excavating and material handling are illustrated in the Sauerman catalog. A copy of this booklet is yours for the asking. Our engineers are at your service to suggest labor-saving methods based on their 41 years' experience.

SAUERMAN BROS., Inc.

532 S. Clinton St. Chicago 7, Ill.

DRILLING

ANYWHERE

We look into the earth

PENNSYLVANIA DRILLING COMPANY

PITTSBURGH, PA.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors

Contractors — Exporters

Cable address—Beliron

STRUCTURAL STEEL

BUILDINGS & BRIDGES

RIVETED — ARC WELDED

Shops — Eddystone

PHILADELPHIA

Main Office Philadelphia 40, Pa.

ROYERSFORD

New York Office 44 Whitehall St., N. Y. 4, N. Y.

VACUUM CONCRETE

Most economical to use for

PRECAST WALLS, FLOORS, ROOFS, BEAMS and COLUMNS—

IT MULTIPLIES THE SPEED

Vacuum Lined Forms can be

RE-USED AS MANY AS 8 TIMES IN ONE DAY

VACUUM HANDLING EQUIPMENT

Strips castings from molds and handles them without breakage

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

When you're running into piles of difficulty, here's the extractor you always can depend on. It has the extra power, the extra ruggedness, speed and efficiency to extract any type of pile and to pull you through a difficult project on schedule. It's really a time saver. And remember . . . time saved is money saved.

The Vulcan Pile Extractor is simple in construction and easy to operate. It is built in three sizes for all extracting purposes—No. 200 for smaller work, No. 400 for heavier jobs and No. 800 for really tough jobs.

Write for complete details on the pile extractor that has proved itself in the field since 1927.

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ... Illinois

mess hall; 40x120 ft. antenna rigging bldg., 34x54 ft. boiler house, 13½x18 ft. gate house at Jim Creek Naval Communication Station, Spec. 25768.

Pa., Lock Haven—DORMITORY—B.A. 1/17—General State Auth., 18 and Herr Sts., Harrisburg, general contract; heating; plumbing; electrical work for women's dormitory at Lock Haven State Teachers College. $560,000. Plans deposit $15 each. George M. D. Lewis, 445 Kressler Court, Scranton Zone 10, archt. A. F. Jones, c/o owner, ch. engr. CD 3/22.

† Wash., Richland—HOSPITAL—B.A. 1/17—General Electric Co. prime contractor to Atomic Energy Comn. for Hanford Works, frame Kadlec hospital addns. rein. con. fdns. Plans deposit $50.

† Md., Camp Detrick—MUNITIONS BLDG.—B.A. 1/18—U. S. Eng., First and Douglas Sts. N. W., Wash 25, D. C., munitions loading bldg. at Camp Detrick, Eng. 49-080-51-19-(19). Bids 9/19 rejected. CD 9/1.

† Colorado—GOVERNOR, etc.—B.A. 1/23—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnishing, del. f.o.b. cars shipping point or f.o.b. cars Walt Siding, governor with pumping equip. hydraulic turbine, at Pole Hill Power plant, governor and turbines at Flatiron Power Plant, Colorado Big Thompson Proj., Spec. DS-3265. L. N. McClellan, ch. engr.

LOW BIDDERS

Commonwealth Electric Co., 417 Broadway, St. Paul, Low Bidder, $394,900, furnish, erect generating unit, etc. at municipal power plant, WILLMAR, MINN. City, E. H. Brogren, clk. CD 11/22.

▲ J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, Low Bidder. $1,746,000 housing units, ASHEVILLE, N. C. Asheville Housing Auth., Asheville. Bids Dec. 14. CD 11/24.

Cowen Constr. Co., Shawnee, Low Bidder, $326,682. womens ward bldg. addn. Manhattan Constr. Co., Manhattan Bldg., Muskogee, Low Bidder $300,352. completing men's ward bldg. at Central State Hospital, NORMAN, OKLA. Board of Affairs, Oklahoma City Zone 5. Bids Sec. 12. CD 12/6.

Montgomery Constr. Co., Grove City, Low Bidder $830,300. 100 unit federal housing, 16 brick apartments in Quimby-Malleable St. Dist. SHARON, PA. Mercer County Housing Auth., Sharon. Bids Dec 14. CD 11/28.

▲ Harmon Constr. Co., 100 S. Indiana St., Oklahoma City, Okla., Low Bidder. $1,857,000. 210 housing units, JACKSON, TENN. Jackson Housing Auth., Jackson. Bids Dec. 15. CD 11/24.

CONTRACTS AWARDED

B. & R. Constr. Co., 110 Market St., San Francisco, Contract Awarded $623,700. 1 story, rein.-con. student health bldg., DAVIS, CALIF. Bd. Regents, University of California, 2288 Telegraph Ave., Berkeley. Bids Dec. 7. CD 12/1.

W. R. Dunkin & Sons General Constr. Co., Bluffton, Contract Awarded. $706,028, Clinton County Hospital addn. FRANKFORT, IND. Clinton Co. Comrs., Court House. Bids Dec. 5, awarded Dec. 8. CD 11/17.

Charles E. Brohawn & Bros., 205 Rosewood Ave., Cambridge, Md. Contract Awarded. $509,134. Medical and surgical unit at Eastern Shore State Hospital, CAMBRIDGE, MD., State, Dpt. P. Imprvts., 506 Park Ave., Baltimore. CD 12/14, under L.B.

Stocke & Olson, 115½ S. W. Third Ave., Rochester, Minn., Contract Awarded. $833,000. service center bldg. at State Hospital, ROCHESTER, MINN. State, Dpt. Admin., State Capitol, St. Paul. CD 11/29 under L. B.

▲ Rogers Constr. Co., Smithfield. Contract Awarded. $1,239,000 Proj. 1, $1,235,000 Proj. 2 housing units, KINSTON, N. C. Kinston Housing Auth., Kinston. Bids Dec. 8. CD 12/13 under LB.

▲ James I. Barnes Constr Co., 6 Bechtle Ave., Springfield. Contract Awarded. $1,643,500. School for Blind on Wyandot Golf Course, Sharon Twp., COLUMBUS, O. Bldg. Comn. for Ohio School for Blind, c/o Dir. P. Wks., State Depts Bldg., Columbus. Bids Nov. 16, awarded Dec. 14. CD 12/4, under LB.

Clement Martin, Inc., 6230 Penn Ave., Pittsburgh. Contract Awarded. $598,793. disturbed male patients bldg. at Woodville State Hospital, WOODVILLE, PA. General State Auth., 18 and Herr Sts., Harrisburg. Bids Dec. 6, awarded Dec. 18. CD 12/11, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ O., Dayton—HOSPITAL—Bids Asked—St. Elizabeth's Hospital, Martin C. Kuntz, pres. Advisory Bd. 49 Hopeland St., hospital addn., between Miami Blvd. and Hopeland St. $3,000,000. Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago, Ill., archts. CD 6/21/45.

Pa., Chester—DEPARTMENT STORE, etc—Bids Asked—Owner, c/o Irving Michaelson, archt., Fox Bldg., Phila., department store and warehouse. Approx. $300,000.

SOON LETS CONTRACT

Ill., Chicago—OFFICE—Millers National Insurance Co. and Illinois Fire Insurance Co., 141 W. Jackson Blvd., Zone 4, soon lets contract, 2 and part 3 story, concrete, face brick, Bedford stone, office, Sheridan Rd., Zone 40, $500,000. Philip B. Maher, 157 E. Erie St., Zone 11, archt.

CONTRACTS AWARDED

Standard Constr. Co., 607 Hanna Bldg., St. Paul, Minn. Contract Awarded. $550,000. superstructure 2 story, unit apartment, HAMMOND, IND. Northcote Apartments, 7244 Northcote Ave. Awarded Dec. 6. CD 11/29.

Standard Constr. Co., 607 Hamm Bldg., St. Paul, Minn. Contract Awarded. $371,241. Superstructure 2 story, bsmnt., student union bldg., 1600 Grand Ave., ST. PAUL, MINN. Macalester College, 1600 Grand Ave., St. Paul. Bids Nov. 22. CD 11/16.

John W. Harris Assoc., 30 Rockefeller Plaza, New York, Zone 20. Contract Awarded. $400,000. office bldg. alterations, 383-385 Madison Ave., NEW YORK, N. Y. N. Y. S. Realty & Terminal Co., 466 Lexington Ave., Zone 17. Walker & Poor, 542 Fifth Ave., Zone 18, archts.

▲ Abco Constr. Co., Commercial Bldg., Dayton, Contract Awarded. Approx. $2,000,000. shopping center, known as East Town Shopping Center, 3 main bldgs. with more than 165,000 sq. ft. floor space, 15 acre tract on Xenia Pike half mile east of Smithville Rd. DAYTON, O. Arthur Beerman, Commercial Bldg.

McCloskey & Co., 1620 W. Thompson St., Phila., Contract Awarded. Approx. $300,000. super market, CLIFTON HEIGHTS, PA. Penn Fruit Co., 1919 Chestnut St., Phila. Howell Lewis Shay, Packard Bldg., Phila., archt.

Springdell Corp., 7060 Garrett Rd., Upper Darby, Separate Contracts. $300,000. residential development, Covington and Myrtle Rds. HAVERTOWN, PA. David Slott, 7060 Garrett Rd., Upper Darby, archt.

Harry M. Shender, 850 Longshore Ave., Separate Contracts. $300,000. residential development, Horter St., etc., PHILA. PA.

Fern Homes Inc., 1827 Sigel St., Phila., Separate Contracts. $300,000. residential development, Hatboro Homes Tract, WILLOW GROVE, PA.

▲ T. B. Hubbard Constr. Co., 1507 Delano St. Owner builds. Approx. $10,000,000 Community Center, HOUSTON, TEX. CD 12/19.

E. H. Hovas, 2351 Claremont Lane. Own Forces. Approx. $300,000. duplex type apartments, HOUSTON, TEX. CD 12/12.

Southwest American Homes, 2005 Canal St. Owner Builds. Approx. $300,00. Housing, Area L, LAKE JACKSON, TEX. CD. 12/4.

▲ Kember Constr. Co. R.R. 1, Sarnia. Owner Builds. $1,500,000. housing development at Oak Acres. SARNIA, ONT.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ind., Terre Haute—GARAGE—B.A. 1/11—Public Service Co. of Indiana, Terminal Bldg., Indianapolis, 1 story garage and office, $600,000. Naess & Murphy, 80 E. Jackson St., Chicago, 4, Ill., archts. CD 8/22/47.

Ill., Chicago—SHOP—Bids Asked—Bastian-Blessing Co., 4201 W. Peterson St., Zone 30, 60x300 ft. shop addn. $150,000. Fox & Fox, 30 N. La Salle St., Zone 2, archts.

Ill., Chicago—FACTORY—Bids Asked—Calumet Heat Treating Co., 12134 S. Green St., Zone 43, 1 story, 15,000 sq. ft., steel, concrete, brick factory, $130,000. Fred Dolke, 189 W. Madison St., Zone 3, archt.

Ill., Chicago—DIE SHOP—Bids Asked—Quality Die Mfg. Co., 9306 S. Baltimore St., Zone 17, 2 story die shop, $80,000. G. H. Bergquist, 3120 W. 111 St., Zone 43, archt.

SOON LETS CONTRACT

Ia., Cedar Rapids—PLANT—Cedar Rapids News Gazette, 500 Third Ave., soon lets contract 2 story, bsmnt. publishing plant addn. $350,000. Morton L. Pereira, 100 W. Monroe St., Chicago, 3, Ill., engr.

S. C., Charleston—WAREHOUSE, etc.—Gas Engine & Electric Co., 280 Meeting St., soon lets contract warehouse and office. Leonard C. Gaines, 183 King St., archt.

CONTRACTS AWARDED

Pozzo Constr. Co., 2403 Riverside Dr., Los Angeles, Contract Awarded. $400,000, 1 story, 27,000 sq. ft., rein. con. service bldg. BURBANK, CALIF. Sisters of Charity of the House of Providence, 501 S. Buena Vista St.

L. J. Graf Co., 700 N. Michigan St., Zone 11, Contract Awarded. $95,000. paint bldg. addn., CHICAGO, ILL. The Glidden Co., 5161 Moffatt St., Zone 30, Chris Chamales, 11 S. La Salle St., Zone 3, archt. Awarded Dec. 11.

E. B. Ludwig Constr. Co., 1350 Jefferson Hy., Contract Awarded. $300,000, mfg. plant, NEW ORLEANS, LA., Plymouth Cordage Co., 314 St. Charles Ave., New Orleans.

John Hill Constr. Co., Syndicate Trust Bldg., 915 Olive St., St. Louis 1, Mo., Contract Awarded, $350,000, 1 story, 200x1,300 ft., brick, steel, concrete warehouse and office, 4935 Tyler Ave., ST. LOUIS, MO. The Spool Cotton Co., 1733 Locust St., St. Louis, Zone 3. Schmidt & Paolicelli, Railway Exchange, 611 Olive St., St. Louis, Zone 1, archts.

Psaty & Fuhrman, Inc., 369 Lexington Ave., Zone 17, Contract Awarded, $975,000, 3 story, 100x200 ft. garage, 7 Ave. and 38 St., NEW YORK, N. Y. 515 Seventh Avenue Corp., 1359 Broadway, Zone 18. CD 7/31.

A. Jacobson & Sons, 437 Chestnut St., Phila., Contract Awarded, $82,000, 1 story, 87x104 ft., brick masonry mfg. bldg., PHILA., PA. N. Schwartz & Sons, 54 and Poplar Sts. Clarence L. Caspary, 1400 S. Penn Square, Phila., archts.

▲ Sioux Falls Constr. Co., 264 Boyce-Greeley Blk., Sioux Falls, Contract Awarded. $6,000,000, 10,000 sq. ft. power plant, SIOUX FALLS, S. D. Northern States Power Co., 15 S. 5 St., Minneapolis, Minn. Pioneer Engineering & Service Co., 208 S. La Salle St., Chicago 4, Ill., engrs.

UNCLASSIFIED

BIDS ASKED

† **R. I., Davisville**—PIER—B.A. 1/9—Pub. Wks. Office, First Naval Dist. Headquarters, 495 Summer St., Boston, Mass., pier rehabilitation, at U. S. Naval Yards & Dock Supply Depot, Spec. No. 25230. Plans deposit $20.

† **S. C., Charleston**—PIER FENDER SYSTEM—B.A. 1/10 Dpt. Navy, Bureau Yards & Docks, P.O. Box 365, Naval Base, Charleston, rehabilitation pier fender sys. and replacing damaged piers and piling at Naval Ammunition Depot, NOY 24019, Spec. 26329. Plans deposit $10.

▲ **Tex., Galveston** — PIERS — B.A. 1/16 — Galveston Wharves, Inc., 2324 Strand St., Pier 35 rehabilitation, enlargement, $850,000; Pier 37 construction, rehabilitation, $650,000. CD 2/15.

Ont., Sault Ste. Marie—FERRY DOCKS—B.A. 1/19—J. D. Millar, deputy minister Ontario Dpt. Highways Prov. Govt.), Toronto, ferry docks on St. Joseph Island and on mainland. Approx. $150,000.

Tex., Earth—POWER LINES—Bids Asked—Southwestern Public Service Co., Mercantile Bank Bldg., electric power lines. Approx. $85,000.

SOON LETS CONTRACT

Ont., New Toronto—SWIMMING POOL—Lakeshore Swimming Club, 18 St. and Birmingham Ave., soon lets contract 45x83 ft. indoor swimming pool, 118x150 ft. bldg. $100,000. Hanks & Irwin, 2848 Bloor St. W., Toronto, archts. John H. Rose, 102 Charles St., W., mechanical engr. J. H. Hooper, 880 Bay St., Toronto, structural engr. CD 10/30.

LOW BIDDERS

▲† Peter Kiewit Sons Co., 1024 Omaha National Bank Bldg., Omaha, Neb. Low Bidder. $2,227,605. West Canal-Frenchman Hills Tunnel, Station 3152 plus 34.24 to 3258 plus 00, Columbia Basin Proj., Spec. DC 3235, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata. Bids 12/13.

CONTRACTS AWARDED

Sullivan, Long & Hagerty, Bessemer, Ala., Contract Awarded. $425,000. natural gas sys., RIPLEY, MISS. City. Bids 12/15 CD 12/7.

Contracting Div., Dravo Corp., Neville Island, Pittsburgh 25, Pa. Contract Awarded. unloading facilities and new harbor on Ohio River, near MARIETTA, O. Electro Metallurgical Co., Div. of Union Carbide & Carbon Corp., 30 E. 42 St., New York, 17, N. Y.

▲ **A. W. Robertson Ltd., 57 Bloor St. W., Toronto,** Contract Awarded. $1,098,000. radar station for Canadian Government, FALCONBRIDGE, ONT. Defense Constr. Ltd., Ontario Regional Office, 395 Fleet St. W., Toronto. Awarded Dec. 19.

▲ **McNamara Constr. Co. Ltd., 42 Industrial St., Toronto, and Fred Mannix & Co., Ltd., 100 Adelaide St., W., Toronto.** Contract Awarded. $3,000,000. Contr. Sect. S-5A of Yonge St. rapid transit subway from Lawton Blvd. to Imperial St., incl. storage yard and shop facilities, open cut subway, rein.-con., steel bridges at street intersections, various shop bldgs., TORONTO, ONT. Toronto Transportation Comn., 35 Yonge St., Toronto. Mathers & Haldenby, 15 St. Mary St. and John B. Parkin Assoc., 717 Church St., archts. DeLeuw, Cather & Co., 150 N. Wacker St., Chicago, Ill., Norman D. Wilson, 388 Yonge St., Toronto, engrs. Bids 12/15. CD 10/18.

PROPOSED PROJECTS

WATER SUPPLY

Ore., Sweet Home—City, City Hall, voted bonds, water sys. imprvs. $100,000. Warren Clark & Gilbert Gross, Salem, consult. engrs. Cliff Ward, Sr., city engr.

▲ **Tex., Brownsville**—City, voted bonds Dec. 9, water plant, $450,000; water sys. rehabilitation, $300,000; water distr. lines, supply, $450,000. E. W. Watts, city engr. CD 11/17.

Tex., Mesquite—City, water distr. lines, $125,000; WW sys. overhauling, $200,000; water supply, $150,000. Homer Hunter, 6403 Bob-O-Link Dr., Dallas, consult. engrs.

Tex., Nacogdoches—City ,3 elevated steel storage tanks and towers, $275,000; water pump. station and distr. lines, $200,000. J. M. Lloyd, 1620 S. Sneed St., Tyler, consult. engr. CD 10/20.

SEWERS, WASTE DISPOSAL

▲ **Conn., Milford**—Town, Bd. Selectmen, sewage disposal plant and sewer service, Wepawaug River, $2,500,000. Metcalf & Eddy, 1300 Staler Bldg., Boston, Mass., consult. engrs. CD 6/1.

▲ **Ia., Clear Lake**—Clear Lake Sanitary Dist., c/o Trustees James Gilruth and T. L. Sears, Clear Lake, and Theo Wolfram. Jr., Ventura, sewage disposal system for towns of Clear Lake and Ventura. $1,185,000. Brown Eng., Co., 6 Ave. and Locust St., Des Moines, consult. engr. CD 1/17.

▲ **La., Ruston**—City, Ruston, bond election Jan. 23, sanitary sewer imprvs. $1,000,000.

(Continued on page 83)

UNDERPINNING

Its Practice and Applications

Second Edition, Revised and Enlarged, published by Columbia University Press

By EDMUND ASTLEY PRENTIS and LAZARUS WHITE

The new edition of this authoritative technical description of underpinning methods and applications for foundation construction has been extensively revised and brought completely up-to-date. The authors describe in detail actual cases of every type of underpinning.

The volume also contains an introductory treatise on soil mechanics, nearly 200 photographs and drawings, and appendices which include, among other information, specifications, legal aspects of underpinning and foundation work, and a glossary of terms. Underpinning is considered the authoritative source for information in the field by engineers, architects, and contractors all over the world.

Price **$10.00**

COFFERDAMS

Second Edition, Revised and Enlarged, published by Columbia University Press

By LAZARUS WHITE and EDMUND ASTLEY PRENTIS

Cofferdams is the only engineering book devoted entirely to the design of cofferdams.

Presentation is made of theoretical considerations of the hydrodynamics of seepage forces, stream erosion, and lateral earth pressures for cofferdams on land and in water. Actual design and construction features are presented by detailed case studies of cofferdams which have come under the authors' supervision. Construction equipment, pumping stations, sheetpiling of wood and steel, bracing systems, excavation methods are among the features described. Actual cases of pitfalls and failures, as well as successes, are given.

This new edition contains 201 photographs and drawings, a glossary of terms, and a bibliography.

Price **$10.00**

"Send order to Columbia University Press, 2960 Broadway, New York 27, N. Y."

SPENCER, WHITE & PRENTIS, INC.

10 EAST 40th ST. NEW YORK 16, N. Y.

602 HAMMOND BLDG. DETROIT 26, MICH.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

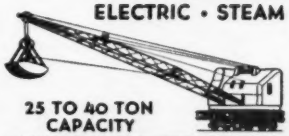
Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

Scranton, Pa. Dept. E, U. S. A.

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO

BUCYRUS, OHIO

PITTSBURGH ·DES MOINES

ELEVATED STEEL TANKS

We design, fabricate and erect Elevated Steel Tanks for every industrial purpose—in all types and capacities. *Write for our descriptive Elevated Tank Bulletin.*

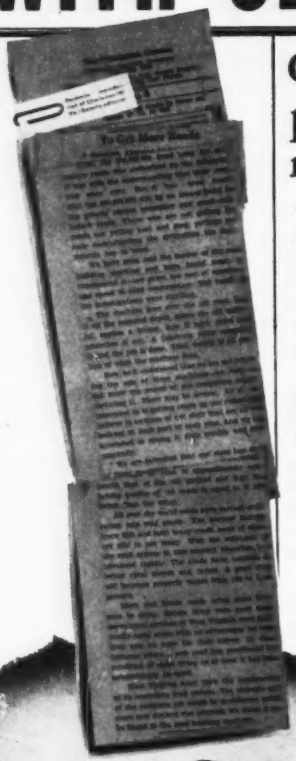
PITTSBURGH · DES MOINES STEEL COMPANY

Pittsburgh, Pa. 3414 Neville Island

Des Moines, Ia. 915 Tuttle Street

Santa Clara, Calif. 621 Alviso Road

WEST VIRGINIA SOLVING ROAD BUDGET PROBLEM WITH SEAMAN MIXERS!



Charleston Gazette in editorial points to Seaman as answer to road system extension . . .

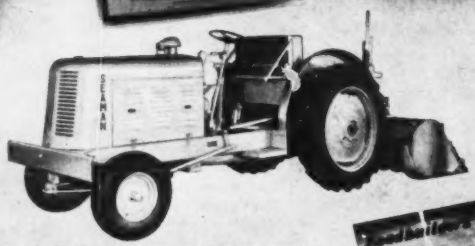
The Charleston Gazette, quite properly, does not mention the SEAMAN by name, calling it only a "road-building machine," but the story is about seven SEAMAN MIXERS now in use by West Virginia. In part, here's what the Gazette says:

"Here is an answer to the prayers of those dwellers in West Virginia hills who are harassed by their inability to get in and out the greater part of the year. Our many miles of dirt roads — often no better than mud roads — are the cause of continual complaints . . .

"We have gone into the matter of the road building machine and have found much to recommend it — low price, low cost of operation and speed in road construction. The result of the investigation was startling.

"The machine goes over the old road . . . mixes the old material and applies a binder, lays it back down and smoothes it out. A following roller compacts it and the job is done.

" . . . It is stated that the cost of construction of this type of road is approximately one-fourth that of the old method . . ." West Virginia's experience with the SEAMAN MIXER is duplicated the country over. The SEAMAN *is by far the best answer* to high quality, low cost stabilized roads.



The SEAMAN SELF-PROPELLED MIXER 7 ft. mixing width. Gasoline or Diesel powered.

The SEAMAN SELF-PROPELLED TRAV-L-PLANT. Like the Self-Propelled Mixer except for addition of spray bar, pump, pump tachometer fifth wheel assembly and meter for precision control of bitumen or water application. 7 ft. mixing width. Gasoline or diesel powered.

Here's a Bulletin describing the SEAMAN Self-Propelled Mixer and the TRAV-L-PLANT. Sent to you FREE on request. Ask for "Self-Propelled Bulletin."

SEAMAN MOTORS, INC.

281 N. 25th St. Milwaukee, Wis.

(Continued from page 81)

▲ **Mo., University City (St. Louis 5, P. O.)**—City, 6801 Delmar Blvd., bond election Feb. 21, sewers, sanitary rubbish disposal plant, streets expansion of parks and recreational facilities, **$2,185,000.** CD 5/18.

▲ **Tex., Brownsville**—City, City Hall, voted bonds, sewage disposal plant, $584,000; general overhauling sanitary sewerage sys. **$250,000;** sanitary sewer collection lines, **$315,000;** storm sewer repairs, **$100,000;** drainage open and closed, **$400,000.** E. W. Watts, city engr. CD 11/17.

Tex., Mesquite—City, sanitary sewer lines, **$180,000;** sewage disposal plant, **$125,000.** Homer Hunter, 6403 Bob-O-Link Dr., Dallas, consult. engr.

Tex., Nacogdoches—City, sewage treatment plant enlargement. **$300,000.** J. M. Lloyd, 1620 S. Sneed St., Tyler consult. engr. CD 10/20.

STREETS AND ROADS

▲ **Tex., Brownsville**—City, voted bonds, general street paving program, $1,800,000; street repairs, **$150,000.** E. W. Watts, city engr. CD 11/17.

EARTHWORK, WATERWAYS

▲ **Quebec**—Ungava Power Co. Ltd., 360 W. St. James St., Montreal, power development at Eaton Canyon, $10,000,000; power development on Mennihok River, $500,000, in Ungava Unorganized Dist. Montreal Eng. Co., Ltd., 244 W. St. James St., Montreal, engr.

AIRPORTS

▲† **Wash., Manchester** — FACILITIES — Yards & Docks Annex, Navy Dpt., Arlington, Va., facilities for aviation and jet fuel bulk storage of 100,000 bbl. **$1,340,000.**

▲† **Wash., Whidbey Island**—AVIATION FACILITIES—Yards & Docks Annex, Navy Dpt., Arlington, aviation facilities at Whidbey Island Naval Air Station. **$4,432,500.**

LATIN AMERICA

Mexico—Mexican Federal Govt., Dpt. P. Wks. & Communications, Mexico City, plans construction portion of trunk highway between Saltillo and Matehuela. **$2,800,000.** CD 6/2.

Mexico, Nuevo Laredo—Mexican Federal Govt., c/o Ministry of Interior, Mexico City, plans race track, appurtenances. **$1,500,000.** CD 7/28.

PUBLIC BUILDINGS

Calif., Brawley—CAFETERIA, etc.—Brawley High School Dist., Brawley, **$400,000** bond election Jan. 23, cafeteria and gymnasium.

Calif., Hawthorne—SCHOOL—Hawthorne School Dist., 419 E. 129 St., plans by Kistner, Curtis, Wright, 816 W. 5 St., frame, stucco Eucalyptus Ave. School. **$325,900.** CD 10/5.

▲ **Calif., Ventura**—COLLEGE, etc.—Ventura Union High School Dist., **$5,750,000** bond election Feb. 6, Junior College Junior High School, gymnasium and swimming pool.

Calif., Whittier—SCHOOL—Whittier Elementary School Dist., voted **$300,000** bonds Dec. 8, school. W. H. Harrison, 816 W. 5 St., Los Angeles, archt.

▲ **Conn., Cheshire**—SCHOOL—Town, School Dist., plans by Carl Malmfeldt & Assoc., 36 Pearl St., Hartford, high school, S. Main St. **$1,200,000.** CD 8/17.

Conn., East Hartford—HOUSING—East Hartford Housing Auth., 70 Cannon Rd., 100-unit housing. **$300,000.**

Conn., Newtown—SCHOOL—Town of Newtown Bldg. Comm., Town Hall, plans by Westcott & Mapes Inc., 109 Church St., New Haven, high school. **$420,000.** CD 5/8.

▲ **Del., Wilmington**—SCHOOL—Wilmington Bd. Educ., plans by Victorine & Samuel Homsly, 927 Gilpin St., Wilmington, school. **$1,205,000.** CD 3/11/46.

Kan., Olpe—SCHOOL—Rural High School Dist. 8, voted bonds Nov. 21 high school **$275,000,** Brinkman & Hagan, Emporia, archts. CD 11/13.

Ky., Louisville—DORMITORIES—Commonwealth of Ky., New State Office Bldg., Frankfort, plans by D. X. Murphy & Bros., Louisville Trust Bldg., 2 brick cottage type dormitories for Kentucky School for the Blind, Frankfort Ave. **$400,000.** E. R. Ronald & Assoc., 554 S. Third St., consult. engrs. CD 6/17/49.

La., Lake Charles—SCHOOL—Calcasieu School Bd., bond election Feb. 5, West Lake School, **$375,000.**

Mass., Adams—SCHOOL—Town of Adams, Commercial St. School Dpt., plans by James A. Britain, 20 Federal St., Greenfield, and Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse, N. Y., brick, steel, concrete Senior High School. **$955,000.** CD 2/27.

Mich., Detroit—SCHOOL—City, Bd. Educ., plans by Malcomson, Fowler & Hammond, 1217 Griswold St., 2 story, bsmnt., brick, steel, concrete Pierce School addn., Iowa and Dwyer Sts. **$500,000.** CD 8/25/44.

Miss., Gulfport—MUNICIPAL AUDITORIUM—City, plans by Milton B. E. Hill, Gulf National Bank Bldg., municipal auditorium, **$300,000.**

▲ **Miss., Meridian** — SCHOOL IMPRVS. — City, voted bonds, school imprvs. **$3,000,000.** CD 11/15.

▲ **Mo., Clayton (St. Louis 5, P.O.)**—SCHOOL—Clayton School Dist., J. L. Brackean, Supt., 7500 Maryland Ave., Zone 5, voted $800,000 bonds, brick, concrete, steel high school on 21 acre tract on Topton way, south of Maryland Ave. **$1,800,000.** Wm. B. Ittner, Inc., 408 Bd. Educ., Bldg., 911 Locust St., St. Louis, Zone 1, archt. CD 11/22.

▲ **Mo., Kansas City**—AUDITORIUM, etc.—City, City Hall, Zone 6, municipal auditorium, and A-Bomb haven in underground garage. **$4,164,459,** John E. Maring, City Hall, city engr. CD 11/10/47, under Unclassified.

▲ **Mo., University City (St. Louis 5, P. O.)**—SCHOOL—University City School Dist., Bd. Educ., Dr. Julius E. Warren, supt. of schools, 6701 Delmar Blvd., $1,000,000 bond election Feb. 27, 2 schools, one in Del Crest sub-division and other on 82 St. south of Fogerty Park. Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, archt. CD 9/27.

Mont., Bozeman—SCHOOL—School Dist. 7, Bozeman, plans by Oswald Berg, Jr., Bozeman, school. **$325,000.**

▲ **N. Y., Far Rockaway**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, plans by Andrew J. Thomas, 153 E. 38 St., New York, Zone 16, housing, five 6 story bldgs. and eight 3 story bldgs. in area bounded by Beach Channel Dr., Hassock St., Redfern Ave. and Beach 12 St. **$4,337,383.** CD 9/15/49.

▲ **Ore., Eugene**—COLLEGE—State Bd. Higher Educ., Eugene, plans by Wick & Hilgers, Spalding Bldg., Portland, construction work at Old Oregon and Commerce Bldgs., **$700,000;** plans by Church, Newberry & Roehr, Builders Exchange Bldg., Portland, remodeling and new construction journalism bldg. **$500,000;** plans by Annand, Kennedy & Boone, Central Bldg., Portland, allied arts bldg., remodeling, addn., $550,000 all foregoing at University of Oregon. CD 3/29/48.

Pa., Eau Claire—SCHOOL—Joint School Bd. of Concord Twp., Venango and Washington Twps., Eau Claire, plans by B. J. McCandless, 239 4 Ave., Ellwood City, consolidated grade school, near here. **$350,000.**

▲ **Pa., Springfield**—SCHOOLS—Springfield Twp. School Dist., Springfield, high school, Rolling Rd., **$300,000;** school, Springfield Rd., approx. **$300,000;** high school, **$1,000,000.**

Tex., Brownfield—CHURCH—City, brick or Austin stone, stone exterior church, concrete pier and beam fdn. **$300,000.**

▲ **Tex., Brownsville**—POWER PLANT—City voted bonds Dec. 9, electric power plant, **$2,450,000;** electric power distr. lines, **$550,000.** E. W. Watts, city engr. CD 11/6.

Tex., Brownsville—CIVIC CENTER—City voted bonds, civic center, **$800,000.** E. W. Watts, city engr. CD 11/17.

▲ **Tex., Snyder**—SCHOOLS—Snyder Independent School Dist., Snyder, plans by Buford & Feinberg, engrs and archts., 326 Interurban Bldg., Dallas, field house and admin. bldg. **$300,000;** 18-room elementary school, (east sect.), **$450,000;** high school incl. auditorium, cafeteria, gymnasium, shops, **$2,300,000;** 18-room elementary school, cafeteria (southwest sect.). **$450,000.** Bonds voted. CD 12/15.

Tex., Tahoka—SCHOOL—Tahoka Independent School Dist., Tahoka, school. **$300,000.**

W. Va., Logan—SCHOOL—Logan Co., plans by Frampton & Bowers, 412—414 11 St., Huntington, Logan Junior High School, **$320,000.**

Wis., Chippewa Falls—COURT HOUSE—Chippewa Co., plans by Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay court house, **$840,000.** CD 9/1/43.

▲ **Ont., Brantford**—HOSPITAL—Brantford General Hospital Bd. Governors, 40 Market St., plans by H. J. Smith, 62 Charles St. E., Toronto, 4 story (ultimate 6 story) bsmnt., 62x140 ft., hospital addn. **$2,556,000.** CD 1/24.

Ont., Cornwall—SCHOOL—Public School Bd., S. H. Cattrell, secy., plans by H. H. Roberts, Westport, school, Sydney and Eighth Sts. Approx. **$300,000.** CD 1/17.

▲ **Ont., Hamilton**—HOSPITAL—City, L. D. Jackson, mayor, City Hall, plans by J. D. Kyles, 36 James St. S., 5 story penthouse, 44x456 ft., convalescent and chronic hospital, 1 story administration wing with offices and 250 seat auditorium, at east and Mountain Hospital grounds. **$2,850,000.** Walker Consultants (electrical) 162 King William St., L. H. Schwindt & Co., (mechanical), 37 King William St., and C. C. Parker (structural) 63 John St., engrs. CD 12/19/49.

Ont., Toronto—HOSPITAL—Province of Ontario, Parliament Bldgs., College St. Toronto Sick Childrens Hospital alterations, renovation.

COMMERCIAL BUILDINGS

▲ **Calif., Alhambra**—STORE—Butler Bros., W. Randolph and N. Canal Sts., Chicago, Ill., plans by Nelson P. Rice, 354 S. Spring St., Los Angeles, 2 story 74,000 sq. ft. store, 343 E. Main St. **$1,000,000.**

▲ **Calif., Los Angeles**—STORE—Butler Bros., W. Randolph and N. Canal Sts., Chicago, Ill., plans by Nelson P. Rice, 354 S. Spring St., 2 story, 90,000 sq. ft. store, Van Nuys and Kittridge Blvds. **$1,500,000.**

▲ **Calif., North Long Beach**—STORE—Butler Bros., W. Randolph and N. Canal Sts., Chicago, Ill., plans by Nelson P. Rice, 354 S. Spring St., Los Angeles, 2 story 90,000 sq. ft. store, Lakewood Center, **$1,000,000.**

Calif., Ontario—STORE—Butler Bros., W. Randolph and N. Canal Sts., Chicago, Ill., plans by Nelson P. Rice, 354 S. Spring St., Los Angeles, 1 story store, 319 Euclid Ave. **$500,000.**

▲ **Ill., Morton Grove**—RESIDENCES—Mills & Sons, Inc., 7610 Grand St., Chicago, Zone 39, 110 residences at Harlem Rd. and Route 58, **$1,200,000.**

▲ **Mass., Cambridge**—AUDITORIUM—Massachusetts Institute of Technology, 77 Massachusetts Ave., plans by Eliel Saarinen, Bloomfield, Mich., auditorium, **$1,500,000.** CD 9/29.

▲ **Mo., St. Louis**—HOTEL—Olive Realty Co., c/o Herman C. Waldman, St. Louis Fire Door Co., 400 Withers Ave., plans by Preston J. Bradshaw & Assoc., 1800 Olive St., Zone 3, 14 story, bsmnt., 63x106 ft. rein.-con., brick, steel apartment hotel, 14 and Olive Sts. **$1,000,000.** CD 8/29.

▲ **Tenn., Nashville**—DOCTORS—Vanderbilt University, Nashville, plans by Marr & Holman, Stahlman Bldg., doctors bldg. in connection with Vanderbilt Hospital. **$1,000,000.**

Tex., Mesquite—DWELLINGS—J. B. Andrews, Mesquite, 50 low-cost frame dwellings, concrete footings and cedar post fdn. **$300,000.**

Tex., San Antonio—HOUSING—G. E. Kinder, 427 W. Lullwood St., low-cost frame housing, Brookview, Dawnview Sts., etc. **$300,000.**

▲ **Alta., Jasper Place (Postal Dist. Edmonton)**—CIVIC CENTER—First New Amsterdam Corp., 120 Broadway, New York, N. Y., Miracle Mile, Civic Center. **$2,000,000.**

Que., Pointe aux Trembles (Postal Dist. Montreal)—ORPHANAGE EXTENSION—Reverend Sisters of the Sacred Heart, 3601 de la Rousseliere St., plans by Gascon & Parant, 934 E. Ste. Catherine St., Montreal, orphanage exten. **$400,000.**

INDUSTRIAL BUILDINGS

Fla., Belle Glade—PLANT—Belle Glade Farmers Cooperative, Belle Glade, rebuild processing plant, Approx. **$200,000.**

▲ **Ga., Rome**—MILL—Anchor Rome Mills, Rome, mill addn., Approx. **$1,000,000.**

▲ **N. C., Lakeview**—PLANT—Wyandotte Worsted Co., Waterville, Me., mfg. plant, 260 acres at Lakeview, 6 min. north of Southern Pines, **$4,000,000-$5,000,000.**

▲ **S. C., Moncks Corner**—PLANT—United Piece Dye Works, Nicholson St., Lodi, N. J., piece dye plant. **$1,000,000.** Francisco & Jacobus, 511 5 Ave., New York, N. Y., engrs.

Tex., Barclair—PLANT—Flint Ink Co. & Howard Flint Chemical Co., 403 Sommerset St., San Antonio, ink plant. **$100,000.**

Tex., Houston—AUTO SERVICE, etc.—Krieger Motors, 1901 Milam St., plans by Delwin V. James, 3008 Carolina St., 2 story auto service, shop, sales. **$100,000.** CD 12/1.

Wis., Brillion—FACTORY—Brillion Iron Wks., Brillion, plans by Foeller, Schober, Berners, Safford & John, 310 Pine St., Green Bay, 1 story L-shaped, 26x195 ft., 30x156 ft., steel, brick, blocks factory addn.

▲ **B. C., Kimberly**—PLANT—Consolidated Mining & Smelting Co. of Canada Ltd., 215 St. James St. W., Montreal, Que., fertilizer production plant addn. Approx. **$9,000,000.**

Ont., Toronto—PLANT—Toronto Milk Producers Assn., 409 Huron St., milk processing plant.

Newfoundland, Donovan's—PLANT—Newfoundland Hardwood Co. Ltd., c/o Dpt. National Resources, St. Johns, plant, **$500,000.**

▲ **Que., Montreal**—FACTORY—North American Cynamid Ltd., Royal Bank Bldg., Toronto, Ont., 80,000 sq. ft. factory, **$1,200,000.**

UNCLASSIFIED

Ala., Birmingham—MOTOR COURT—J. Jackson, Cliff Stiles & H. N. Waters, c/o Lawrence S. Whitten, archt., Brown-Marx Bldg., motor court. Approx **$750,000.**

Montana — RURAL DISTRIBUTION LINES — McCone County Electric Co-operative, Circle, 540 mi. rural distr. lines, acquisition of 8 mi. sys. imprvs., McCone and Dawson Counties, **$800,000.** Associated Engineers, 216 12 St., Bismark, N. D., consult. engrs. CD 12/13.

Neb., Omaha—PARKING AREA—Shoppers Auto Park, Inc., Castle Hotel, off street parking area. **$100,000.** Howard Thomas Eng. Co., 212 S. 18 St., consult. engr.

▲ **Texas and Arkansas**—COMPRESSOR STATIONS—Texas-Illinois Natural Gas Pipe Line Co., 20 N. Wacker Dr., Chicago, Ill., addnl. compressor station, near Waskom, Harrison Co., Tex., **$650,000;** booster compressor station, near Maynard, Randolph Co., Ark., **$390,000;** booster compressor station, near Donaldson, Hot Springs Co., Ark., **$500,000;** addnl. compressor station, near Conroe, Montgomery Co., Tex., **$450,000.** CD 11/18/49.

▲ **British Columbia**—TRANSMISSION LINE—Consolidated Mining & Smelting Co. of Canada Ltd., 215 St. James St. W., Montreal, Que., high voltage transmission line from its hydro-electric plants at Kootenay River, Kimberley. Approx. **$2,850,000.**

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

N. J., Wanaque—B.A. 1/10—North Jersey Dist. Water Supply Comm., Wanaque, steel sheet coffer-dam at north end of Pompton Lakes Dam, Pompton Lakes, Passaic Co. Plans deposit $5; adv. ENR. 1/4. CD 9/28/45.

▲ **Calif., Los Angeles**—B.A. 1/15—Los Angeles Dpt. Water & Power, 207 S. Broadway, 35,000 ft. 60 and 66 in. rein.-con. or welded steel pipe line, $2,000,000. Plans deposit $50. S. B. Morris, ch. engr. and gen. mgr. CD 1/15/45.

▲ **Mo., St. Louis**—B.A. 1/23—City. Frank J. McDevitt, pres. Bd. P. Service. 304 City Hall, 12 and Market Sts., Zone 3, altering secondary basins, connecting conduits at Chain of Rocks WW Plant on Mississippi River. $1,300,000. C. B. Briscoe, 311 City Hall, engr. and dir. P. Utilities. CD 5/7/47.

CONTRACTS AWARDED

Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill., Contract Awarded. **$290,000**. 2 m. g. elevated water tank on Strand Ave. between Otterbein and Oxford Aves. to serve West Side, DAYTON, O. City Municipal Bldg. Bids Dec. 7, awarded Dec. 13. CD 11/29.

City, Corpus Christi, Purchase and Hire. **$200,000**. c.i. water lines, CORPUS CHRISTI, TEX. Robt. L. Otto, city engr. CD 12/3/48.

Ross Mitchell, Inc., 5304 Old Spanish Trail, Houston, Tex. Contract Awarded. **$667,700**, est. $400,000. Filter or treatment plant, SAN ANGELO, TEX. City, San Angelo. Bids Dec. 18. CD 11/22.

SEWERS, WASTE DISPOSAL

LOW BIDDERS

Artukovitch Bros., 16200 S. Atlantic Ave., Paramount, Calif., Low Bidder. **$498,340**, main trunk line and outfall sewer, BAKERSFIELD, CALIF. City Council, 1400 Chester Ave. Bids Dec. 18. CD 11/29.

James Bros., Okemah, Okla. Low Bidder. **$65,941**, est. $65,000, sewage disposal plant for Negro Boys School, BOLEY, OKLA. Board of Affairs, Capitol, Oklahoma City, Zone 5. Bids Dec. 19. CD 12/12.

H. J. Happle, Barnes Bldg., Muskogee, Okla. Low Bidder. $132,425, est. $140,000, water purification and sewage disposal plant at Taft Consolidated Negro School, TAFT, OKLA. Board of Affairs, Capitol, Oklahoma City, Zone 5. Bids Dec. 19. CD 12/12.

Kahn & Jackson, Inc., Blossom St., Low Bidder. $170,137, sanitary sewer lines, COLUMBIA, S. C. City, City Hall, 1737 Main St. Bids Dec. 12. CD 11/30.

Heldenfels Bros., Box 1917, Corpus Christi, Tex., Low Bidder. $79,217, est. $70,000, storm sewers, Shely and Baldwin Sts., CORPUS CHRISTI, TEX. City, Corpus Christi. Bids Dec. 23. Robert L. Otto, city engr.

T. H. Lee, 401 N. Tancahua St., Corpus Christi, Tex. Low Bidder. **$155,968**, storm sewer extension along Lipan St. Heldenfels Bros., Box 1917, Corpus Christi, **$779,652**, storm sewers, various locations throughout city, CORPUS CHRISTI, TEX. R. L. Otto, city engr.

CONTRACTS AWARDED

▲ Fitzsimons & Connell Dredge & Dock Co., 10 S. La Salle St., Chicago, 3, Ill. Contract Awarded. **$1,566,075**, sub. and superstructure, screen chamber gate control, connections, pumps and tubes, Racine Ave. Pumping Station addn., CHICAGO, ILL. Sanitary Dist. of Chicago, 910 S. Michigan St., Zone 5. Bids Dec. 7, awarded Dec. 20. CD 12/15, under LB.

▲ James McHugh Constr. Co., 6449 S. Park Ave., Chicago, 37, Ill. Contract Awarded. **$2,311,288**, sewerage sys. for various locations, incl. revision drainage sys., CICERO, ILL. City, City Hall. Awarded Dec. 15. CD 11/22, under LB.

Vincent A. Di Vito, 2929 W. Flournoy St., Chicago, Zone 12, Contract Awarded. **$104,539**. Storm sewerage sys., WHEATON, ILL. City, City Hall. Awarded Dec. 7. CD 7/28.

Koller Constr. Co., 612 Tradesmen National Bank Bldg., Oklahoma City, Okla., Contract Awarded, **$106,977**, sanitary sewerage sys. in Crescent Park Subdivision, HOUMA, LA. Terrebonne Parish Police JJury. Bids Dec. 13. CD 11/20.

B & M Constr. Corp., Petroleum Bldg., Oklahoma City, 2, Okla. Contract Awarded, **$67,800**, est. $69,010, misc. connections between new and old sanitary sewers, OKLAHOMA CITY, OKLA. Benham Engr. Co., American Natl. Bldg., Oklahoma City, Zone 2, engr. Awarded Dec. 19. CD 5/15.

City, City Hall, 900 Brazos St., Houston, Tex. Purchase and Hire, **$125,000**, addnl storm sewers, various sections of city; San Jacinto Equip Co., 1107 Girard St.; Contract Awarded. **$163,968**, Sect. 1, sanitary and storm sewers in portions, Frio St.; Gulf Bitulithic Co., 2820 Polk St., Contract Awarded, **$138,094**, Sect. 2, storm sewers and paving, Hadley Ave., HOUSTON, TEX. R. W. Lee, c/o owner, city engr. Awarded Dec. 21. CD 5/24/49.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

January 10
Louisiana

January 18
Michigan

January 23
Michigan

† **South Dakota**—B.A. About 2/14—U. S. Eng., 1709 Jackson St., Omaha, Neb., construct Chicago, Milwaukee, St. Paul & Pacific R. R. Bridge over Missouri River, Stage II, near Chamberlain, CIVENG 25-066-51-71.

LOW BIDDERS

▲ Industrial Contg. Co., 3050 Fourth Ave. S. Minneapolis, Minn. Low Bidder, **$2,108,526**, est. $2,000,000. Bridge over Missouri River at north part of Omaha, OMAHA, NEB. North Omaha Bridge Assn., 2912 Ames Ave. Bids Dec. 19. CD 11/22.

▲ A. S. Wikstrom, Box 217, Skaneateles. Low Bidder, **$1,185,361**, est. $1,202,692. 5 span 600 ft. plate girder bridge carrying Utica St. in the City of Oswego over the Oswego River, incl. grading and drainage, Oswego Co., NEW YORK. Bureau Contracts & Accounts, Albany. Bids Dec. 20. CD 12/5.

Lee Hoffman, 535 S. E. Water St., Portland. Low Bidder, **$677,600**, superstructure for steel truss and girder span railroad bridge, Middle Fork, Willamette River, Lane Co., CIVENG 35-026-51-92, OREGON. U. S. Eng., Pittock Block, Portland. Bids Dec. 12.

CONTRACTS AWARDED

▲ Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y. Contract Awarded. **$3,588,959**, substructure, Part A, for John E. Mathews Bridge over St. Johns River between Jacksonville and Arlington, Duval Co., Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., **$7,376,712**, superstructure, Part B, FLORIDA, State Rd. Dpt., Seminole Hotel, Jacksonville. Bids Nov. 30. CD 12/5, under LB.

Kenny Constr. Co., 111 Washington St., Chicago, Zone 2, Contract Awarded **$148,000**, underpinning columns of La Salle St. R.R. station tracks to allow underpassage of Congress Street Superhighway, CHICAGO, ILL. Bids Aug. 31, awarded Dec. 5. CD 8/18.

General Constr. Co., Box 3244, Portland. Contract Awarded. **$787,736**. Viaduct approaches to Willamette River Bridge, Marion and Polk Counties, OREGON. State Hy. Comm., State Office Bldg., Salem. Bids Dec. 20. CD 12/12.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

January 10
Louisiana
New York
January 17
California

January 18
California
Michigan
January 23
Michigan
New Jersey

† **Wash., Arlington**—B.A. 1/11—Pub. Wks. Office. 13th Naval Dist., 1611 W. Wheeler St., Seattle, grading 1.5 mi. roadway and approx. 3 acres future shop area at Jim Creek Naval Communication Station, Spec. 26210. Plans deposit $10. CD 9/14.

† **Tex., Marlin**—B.A. 1/30—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., grading, landscaping in Hospital area. Proj. No. 10-4007, Spec. No. 50179. Est. $75,000.

LOW BIDDERS

▲ W. A. McWaters Co., 2 Clayton St., Montgomery, Ala., Haigler Constr. Co., Atlanta Hy., Montgomery, Ala., Dozier Bros. Constr. Co., Mt. Meigs, Ala., Low Bidders, imprv. streets, Contr. 1, **$938,689**, Contr. 2, $594,631, Contr. 3, **$563,919**, Contr. 4, $688,767, MOBILE, ALA. City of Mobile. Bids Dec. 19.

▲ Granite Constr. Co. Box 900, Watsonville, Calif., Low Bidder, **$1,032,455**, grading, surf. 5.5 mi., two rein.-con. bridges between Ignacio and Forbes Overhead, Marin Co.; Frederickson Bros., 1259 6 St., Emeryville, Calif., **$782,676**, grade, surf. 1.7 mi., two parallel grade separation structures between Alamo Creek and Utalis Creek, Solano Co., CALIFORNIA. State Div. Hys., Sacramento, Calif. Bids Dec. 20. CD 11/29.

Claude Fisher Co., Ltd., 2455 E. 55 St., Vernon, Calif., Low Bidder, **$372,785**, imprv. Stocker St. to La Cienega Blvd., (C.C. 0-669) Inglewood, LOS ANGELES CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Bids Dec. 19. CD 11/30.

R. A. Heintz Contg. Co., 8101 N.E. Union St., Portland, Ore., Low Bidder, **$180,864**, grading surf., oiling 4.71 mi. Sams Valley Hy., Jackson Co., OREGON. State Hy. Comm., State Office Bldg., Salem. Bids Dec. 19.

State Hy. Comm., State Office Bldg., Salem, Ore., rejected bids Dec. 20, grading, surf. 12.27 mi., construct concrete bridge, Klamath Lake Hy., Klamath Co., OREGON, L.B. **$327,025**. CD 12/12.

Coos Bay Dredging Co., Box 127, Coos Bay, Ore. Low Bidder, **$298,744**, rock base shoulders 2.02 mi., paving 2.26 mi. Oregon Coast Hy., Coos Co.; F. L. Somers, 1111 Walnut St., Klamath Falls, Low Bidder, **$89,384**, grading, surf. 5.58 mi. Cottonwood Creek and West Side Rds., Lake Co., OREGON. State Hy. Comm., State Office Bldg., Salem. Bids Dec. 20. CD 12/12.

Allegheny Asphalt & Paving Co., Inc., S. 25 St., Pittsburgh, Low Bidder. **$69,875**, general constr. roadways, utilities; Steel City Piping Co., 3516 Charlotte St., Pittsburgh, **$77,400, plumbing**, for senile bldgs. at Mayview State Hosp-tal, MAYVIEW, PA. General State Auth., 18 and Herr Sts., Harrisburg. Bids Dec. 20. CD 12/7.

CONTRACTS AWARDED

Union Constr Co., Missoula, Mont., Contract Awarded. **$225,958** grading 2.294 mi., bit. 8.971 mi. Salmon-Montana Line Hy. Proj. D30-64-03-E2, Salmon Co., IDAHO. Bureau Pub. Rds., Dpt. Commerce, 609½a Bannock St., Boise. Bids 12/13. CD 12/4.

W. H. Hinman, Inc., North Anson, Me. Contract Awarded, **$627,419**. b. conc. 3.669 mi. F. A. Proj. FI 01-1 (1), Freeport; P. E. Susi & Co., Pittsfield, Me., **$135,282**. bit. grav. 2.77 mi., F. A. Secondary Proj. S 0187 (1) and S 0187 (2), Turner and Hartford, MAINE. State Hy. Comm., Augusta. Bids Dec. 20. CD 12/11.

Victor C. Arzani Contg. Co. & Green Island Constr. Co., 2507 James St., Syracuse. Contract Awarded. **$740,728**. c. conc. 3.46 mi. and 2 bridge structures on High Bridge Rd. (County Road 8) extending southeasterly from Route 5 in town of DeWitt to Route 92 in village of Manlius, Onondaga Co. NEW YORK. Dpt. P. Wks., Albany. Bids Nov. 15. CD 11/17, under LB.

▲ Bero Eng. Constr. Corp., McKinley Bldg., Buffalo, N. Y., Contract Awarded, **$1,005,151**, grading, structures 7.08 mi. Thruway, Jordan-Warners area of Onondaga Co., NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany. Bids Nov. 15. CD 11/18, under LB.

Myron Groseclose, Box 644, Bethany, Contract Awarded. **$128,461**. Est. $128,760, c. conc. paving Dist 1137 OKLAHOMA CITY, OKLA. City, City Hall, Zone 2. Bids Dec. 5. awarded Dec. 12. CD 11/21.

Rush Constr. Co., Enterprise, Ore., Contract Awarded, **$74,567**, grading 4.47 mi., rock surf. 10.37 mi., East Cottonwood Canyon-York Ranch Sect., Wasco-Heppner Hy., Gilliam Co., OREGON. State Hy. Comm., State Office Bldg., Salem. Bids Dec. 19.

Maverick Co., Eagle Pass, Own Forces. 4 mi. road imprvs. on Quemado Hy., Approx. **$60,000**; 6 mi. road imprvs. and surf., Zavalla and Eagle Pass Rd. $75,000. EAGLE PASS, TEX. CD 6/16/47.

City, City Hall, 900 Brazos St., Houston, Tex. Purchase and Hire, **$150,000**, street paving, various sections of city, HOUSTON, TEX. L. Fugate, city engr. CD 5/24/49.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Washington**—B.A. 1/16—U. S. Eng., 19 E. Poplar St., Walla Walla, clearing and burning fruit trees, Berrian, Hover and Kennewick areas, Benton Co., Serial No. CIVENG 45-164-51-35. CD 8/23/45.

† **California**—B.A. 1/18—Bureau Reclamation, Dpt. Interior. Tracy, furnishing, processing, hauling, placing grav. for Delta-Mendota canal, Station 1362 plus 50 to 1930 plus 00 and 2015 plus 00 to 2149 plus 80, Central Valley Proj., Spec. 200C-145. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† **Oregon**—B.A. 2/1—Bureau Reclamation, Dpt. Interior, Bend, pneumatically-applied mortar canal sealing, Mile 7 to Mile 26, North Unit Main Canal, Deschutes Proj., between Bend and Redmond, Spec. No. 100 C-114.

† **Oregon**—B.A. 2/6—Bureau Reclamation, Dpt. Interior, Boise, Idaho. exploratory drilling and water testing at Haystack Damsite, Deschutes Proj., near Culver, Spec. No. 100 C-115.

LOW BIDDERS

Steve P. Rados, 2975 San Fernando Rd., Los Angeles, Calif. Low Bidder. **$668,269**. Earthwork, pipe lines, structures, Central Valley Proj., Spec. DC 3236, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lindsay. Bids Dec. 20. CD 12/13.

Halpin, Albright & Peltier, Thibodaux, La., Low Bidder. **$31,044**, 312,000 cu. yd. channel excav., POINTE-A-LA-HACHE, LA. Plaquemines Parish Police Jury. Bids Dec. 12. CD 11/30.

† U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715 Baltimore 3, Md., cancelled bids to have been opened Jan. 24, dredging maintenance and imprvs. Brewerton Sect. and Brewerton-Fort McHenry Angle, Baltimore Harbor and Channels, CIVENG 18-020-51-5, MARRYLAND. CD 12/26.

Fischer Constr. Co., 4053 Clifton St., Cincinnati. Low Bidder. **$699,092**, est. $760,000. 380 ft. Rocky Fork Dam, 10 mi. southeast of HILLSBORO, O. State Pub. Wks, Dpt., Columbus. Bids Nov. 23. CD 10/27.

† Baldwin Locomotive Works, Chester Pike and Simpson St., Eddystone, Phila., Pa. Low Bidder. **$853,190**. Mfg. and del. three 2,500 c.f.s. hydraulic pumps for McNary Dam, Unatilla Co., OREGON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids Dec. 19. CD 11/24.

Eastern Eng. Co., 4 N. North Carolina Ave., Atlantic City, N. J. Low Bidders. **$212,350**. Est. $400,000. channel rectification Schuylkill River from Penn Street Bridge, Reading to the Norristown Dam, Berks and Montgomery Co., PENNSYLVANIA. Dpt. Forests & Waters, 404 Education Bldg., Harrisburg. Bids Dec. 19. CD 12/7.

† Gulf Coast Dredging Co., Texas City, Tex. Low Bidder. **$46,530**, est. $42,757. Dredging Cedar Bayou Channel between Atkinson and Boaz Island. Harris and Chambers Counties, TEXAS. U. S. Eng., 606 Santa Fe bldg., Galveston. Bids Dec. 20.

McGinnes Bros., 5616 Griggs Rd., Houston, Tex. Low Bidder, **$186,187**. Excavation and clearing Dpl in Cypress Creek Zone, Unit K-100, HOUSTON, TEX. Harris County Flood Control Dist., Stewart Bldg. Bids Dec. 18. CD 12/13.

Minnis & Shilling, 3144 W. 11 St., Eugene, Ore. Low Bidder. **$616,160**. Exten. Wapato irrigation proj., WASHINGTON. U. S. Indian Service Irrigation Div., Bldg. 34, Swan Island, Portland 18, Ore. CD 11/16.

CONTRACTS AWARDED

▲† Winston Brothers Co., Monrovia, Calif. Contract Awarded. **$1,691,362**. Bald Mountain pressure tunnel and access roads, Estes Park-Foothills power aqueduct, Colorado Big Thompson Proj., Spec. DC 3208, COLORADO. Bureau Reclamation, Dept. Interior, Loveland. Awarded 12/11. CD 11/27, under LB.

AIRPORTS

BIDS ASKED

† **S. D., Rapid City**—HANGAR—B.A. 1/17—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., repairs, alterations to HB hangar at Rapid City Air Force Base, Weaver, Serial No. ENG 25-066-51-27. Bids 11/9 rejected. CD 10/30.

▲† **Alaska**—OFFICERS QUARTERS, etc.—B.A. 1/23—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, twenty-five 8-family row type quarters at Eielson Air Force Base, eleven 8-family row type quarters at Ladd Air Force Base, Inv. No. S 95-507-51-28, $3,500,000. Plans deposit $50; one 20-man bachelor officers' quarters at Eielson Air Force Base and one 20-man bachelor officers' quarters at Ladd Air Force Base, Inv. No. S 95-507-51-29. $500,000. Plans deposit $50. CD 11/27.

LOW BIDDERS

▲† Five Boro Constr. Corp., 89 Ridge St., New York, and The Malan Plumbing Co., Inc., 25-09 42 Rd., Long Island City. Low Bidders. **$2,677,721**, transforming the former Sampson Naval Training Station, into an Air Force Base, No. Eng 30-075-51-371, SAMPSON, N. Y. U. S. Eng., 80 Lafayette St., New York, Zone 13. Bids Dec. 21. CD 12/1.

CONTRACTS AWARDED

Union Contg. & Eng. Co., 30 N. La Salle St., Chicago, Zone 2, Contract Awarded. **$165,900**, repave and rehabilitate runways on Midway Airport, CHICAGO, ILL. City, Dpt. P. Wks., City Hall. Awarded Dec. 1. CD 1/14/47.

Wortmann & Sons, Inc., 109 E. 29 St., New York. Contract Awarded. **$617,238**. 10 story steel permanent control tower at New York International Airport, IDLEWILD, N. Y. The Port of New York Auth., 111 8th Ave., New York, Zone 11. Bids Nov. 29. CD 11/2.

Wortmann & Sons, 109 E. 29 St., New York. Contract Awarded. **$208,378**, expand fuel storage facilities at New York International Airport, IDLEWILD, N. Y. The Port of New York Auth. 111 8th Ave., New York, Zone 11. Bids Nov. 20. CD 11/2.

MacAsphalt Constr. Corp., 3315 Lawrence St., Flushing. Contract Awarded. **$106,750**. Repair damage to dike at La Guardia Airport, JACKSON HEIGHTS, N. Y. The Port of New York Auth., 111 8th Ave., New York, Zone 11.

FOREIGN

South Africa, Johannesburg—Municipality of Despatch in Cape Province, receiving bids January 19, Sect. A, high-tension overhead transmission line on wooden poles for 11 KV sys.; Sect. B, 11 KV cable feed from toll gate, Uitenhage Municipal sub-station to terminal pole for overhead transmission lines; and to despatch main sub-station. Ring main 11 KV throughout the Twp.; Sect. C, main high-tension switchboard; Sect. D, outdoor steel sub-stations; Sect. E, low-tension distr. sys. throughout the township; Sect. F, pole mounted sub-stations; Sect. G, low-tension feeder cables from sub-stations to overhead distr.; Sect. H, street lighting throughout the township; Sect. I, 400/500 house service connections. Plans deposit £5.5s.

PUBLIC BUILDINGS

BIDS ASKED

† **N. H., Nashua**—RESIDENCE, etc.—B.A. 1/8—Fish and Wildlife Service, Dpt. Interior, 59 Temple Pl., Boston 11, Mass., excavation for and construction residence and bsmt. garage at U. S. Fish Cultural Station.

N. C., Statesville—HOSPITAL—B.A. 1/9—Billingsley Memorial Hospital, c/o Charles C. Hartmann & Son, archts., Greensboro, hospital. Plans deposit $50.

† **S. C., Charleston**—SHOP—B.A. 1/9—Yards & Docks Annex, Navy Dpt., Arlington, Va., converting, enlarging Bldg. 21 into a work shop. Plans deposit $10.

Va., Petersburg—POWER PLANT—B.A. 1/9—Central State Hospital at office Dr. J. E. Barrett, comr. Dpt. Mental Hygiene & Hospitals, 9 N. 12 St., Richmond, boiler plant bldg. with plumbing and electrical equip., and steam distr. sys. extens. incl. Div. 1 distr. sys., construction work; Div. 2, reinstalling existing boiler and stoker; Div. 3, mechanical equip., piping work; Div. 4, coal conveying equip; Div. 5, ash handling equip; Div. 6, radial brick chimney. $574,127. Plans deposit $10. Wiley & Wilson, 517 American Bldg., Richmond, consult. engrs. CD 10/24/49.

Fla., Vero Beach—B.A. 1/10—Indian River Co. Hospital Assoc., Court House, hospital. $600,000. Extended date. Reynolds, Smith & Hills, 227 Park St., Jacksonville, archts. CD 12/7.

▲ **Ia., Waterloo**—SCHOOL—B.A. 1/10—Independent School Dist. of Waterloo, 1 and 2 story, 175x450 ft., rein.-con., brick, granite terra cotta Junior High School, Logan Ave. $1,300,000. Mortimer B. Cleveland, 424 S. 4 St., archt. CD 11/29.

N. Y., New York—HEALTH CENTER—B.A. 1/10—Dpt. P. Wks., Municipal Bldg., Zone 7, general contract; plumbing; heating and ventilating; electrical work and lighting for alterations, addns. to East Harlem Health Center, 158-164 E. 115 St., Manhattan Boro. Plans deposit $25. CD 11/18/46.

N. C., Lumberton—SCHOOLS—B.A. 1/10—Robeson Co. Bd. Educ., B. E. Littlefield, supt., Lumberton, Pembroke High Gymnasium; Pembroke Elementary School; Rowland Negro High School. Plans deposit $25 each; general constr. $15 each mechanical. Charles W. Connelly, 1201 Elizabeth Ave., Charlotte, archt.

Pa., Scotland — HOUSING — B.A. 1/10 — General State Auth., 18 and Herr Sts., Harrisburg, school addn. to provide addnl. class rooms at Pennsylvania Soldiers' Orphan Home. $420,000. Plans deposit $10 each. Buchart Eng. Co., 611 W. Market St., York, archt. A. F. Jones, c/o owner, ch. engr. CD 6/27.

Tenn., Memphis—SCHOOL—B.A. 1/10—Shelby Co. Bd. Educ., 317 Poplar St., brick, steel Bartlett School, concrete fdn. $300,000. E. L. Harrison, 81 Madison Bldg., archt. CD 6/1/43.

Va., Roanoke—HIGH SCHOOL—B.A. 1/10—Roanoke City School Bd., 211 Church Ave. S.W., Lucy Addison High School, Fifth St. and Orange Ave. Approx. $500,000. Plans deposit $50. Stone & Thompson, 609 S. Jefferson St., archts. CD 3/23/45.

N. H., Hillsboro—SCHOOL—B.A. 1/11—Town, School Dpt., High School, Hillsboro, 1 story masonry school addn. $300,000. Plans deposit $50. Bids 10/26 rejected. Perly F. Gilbert Assoc., Inc., 53 Central St., Lowell, Mass., archt. CD 10/26.

† **N. M., Los Alamos**—WAREHOUSE—B.A. 1/11—U. S. Atomic Energy Comm., Los Alamos, rein.-con. warehouse, TA-40, Project B, Inc. No. 291-51-54. Approx. $100,000. Extended date. CD 12/6.

C., New Lebanon—SCHOOL—B.A. 1/11—Johnsville-New Lebanon School Dist., Dana S. Purinton, clk. Bd. Educ., High School Bldg., elementary school and high school addn. Plans deposit $10. Walker, Norwick & Templin, 1301-4 American Bldg., Dayton, Zone 2, archts. CD 7/27.

Pa., Fairview—B.A. 1/11—SCHOOL—Consolidated Dist. of Fairview and Fairview Twp., Fairview, 1 story, brick, block school. $445,000. Plans deposit $15. FreeLerg & Lindquist, 16 E. 4 St., Jamestown, N. Y., archts.

▲ **Ky., Louisville**—SCHOOL—B.A. 1/12—Louisville Bd. Educ., 5 and Hill Sts., Negro high school, $3,500,000. Plans deposit $25. T. J. Nolan & Sons, Kentucky Home Life Bldg., Zone 2, archts. E. R. Ronald & Assoc., 554 S. Third St., engrs. CD 8/5/48.

Va., Harrisonburg—HIGH SCHOOL—B.A. 1/12—City, School Board Office, Harrisonburg, Harrisonburg High School. Plans deposit $25. Smithey & Boynton, 112 W. Kir Ave., Roanoke, archts.

Alta., Calgary—BARRACK BLOCK—B.A. 1/13—J. D. McCarthy, secy. Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., Barrack Block No. 2 and Mess No. 1, Currie Barracks, Tender No. G23-C2-27. $575,000. Plans deposit $100.

▲ **Ala., Dothan**—HOUSING—B.A. About 1/15—Dothan Housing Auth., Dothan Proj. Ala. 7-3, 156 housing units. Approx. $1,000,000. Pearson, Tittle & Narrows, First National Bank Bldg., Montgomery, archts. CD 7/25.

▲ **Va., Fredericksburg**—SCHOOLS—B.A. About 1/15—City, addn. to Walker Grant School for negroes and a 650 pupil white high school. $1,100,000. CD 11/16, under LB.

B. C., Esquimalt—SCHOOL—B.A. 1/15—Secretary-Treasurer, School Dist. 61, 1046 Joan Crescent, Victoria, high school addns., exten., $415,000. Plans deposit $50. James & Poirson, 150 Royal Trust Bldg., Victoria, archts. CD 9/31/46.

B. C., New Westminster—HOSPITAL—B.A. 1/15—Province of British Columbia, Parliament Bldgs., Victoria, three 2 story, bsmnt., rein.-con. unit, Mental Hospital, $750,000, Clive Campbell, Parliament Bldgs., Victoria, archt. CD 11/21.

▲ **Tex., Corpus Christi**—TERMINAL ELEVATOR—B.A. After 1/15—Nueces County Navigation Dist. 1, c/o Byrd Harris, port dir., P. O. Box 1541, 2,000,000 bu. shipside terminal elevator. $2,500,000. Horner & Wyatt, 516 Dwight Bldg., Kansas City 6, Mo., consult. engrs. Duane Orr, c/o owner, dist. engr.

Ala., Phenix City—HOUSING—B.A. 1/16—Phenix City Housing Auth., Phenix City, 174 unit, Riverside Court Housing. Extended date. L. D. Raines, 2443 Wynnton Rd., Columbia, Ga., engrs. CD 11/22.

Calif., San Jose and Richmond—ARMORIES—B.A. 1/16—State Div. Architecture, P. Wks. Bldg., Sacramento, 2 rein.-con. type H armories for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Santa Rosa—SCHOOL FACILITIES—B.A. 1/16—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract; electrical work; heating, ventilating, and refrigeration; plumbing and kitchen equipment, 52,000 sq. ft., rein.-con. permanent facilities for Los Guilucos School of Girls. Plans deposit $50. Anson Boyd, Sacramento, state archt. CD 9/21/49.

Fla., Tampa—HOSPITAL—B.A. 1/16—State Tuberculosis Bd., Box 1847, Delray Beach, Southwestern Tuberculosis Sanatorium. Approx. $300,000. Plans deposit $60.

Ia., Pella—POWER PLANT—B.A. 1/16—City, power plant bldg. changes, one turbine steam generator with condenser. Approx. $300,000.

Tenn., Cleveland—HOSPITAL—B.A. 1/16—Bradley Co., Thomas E. Bowers, chn., Cleveland, 60-bed hospital. $800,000. CD 12/7, under LB.

† **Tenn., Tullahoma**—ADMINISTRATION, etc.—B.A. 1/16—U.S. Eng., Tullahoma, administration and engineering bldg. at Arnold Engineering Development Center. CD 7/27.

Tex., Galveston—SCHOOLS—B.A. 1/16—Galveston Independent School Dist., c/o Bd. Trustees, 5200 N. Alamo St., 200,000 sq. ft. high school for Whites; 125,000 sq. ft. Negroes High School. Plans deposit $50 each. Preston M. Geren, Neil P. Anderson Bldg., Fort Worth, archt. R. R. Rapp, Guaranty Bldg., engr. CD 4/10.

Calif., Cuyama—SCHOOL—B.A. 1/17—Cuyama Union School Dist., frame, stucco school. $300,000. Plans deposit $50. Bids 12/13 rejected. Ernest L. McCoy, Hay Bldg., Bakersfield, archt. CD 12/5.

Ind., Anderson—SCHOOL—B.A. 1/17—Anderson School City, 530 W. 11 St., 14-room brick, steel school, to replace frame Twenty-Ninth St. School. $450,000. Plans deposit $25. Miller & Henning, Anderson Bank Bldg., archts. CD 1/26/45.

N. Y., Northport — GROUNDS DEVELOPMENT — B.A. 1/17—Bd. Educ., Union Free School Dist. 4, Northport High School, Laurel Ave., grounds development. Contr. 1 Ocean Ave. School; Contr. 2, Larkfield School; Contr. 3, Laurel Avenue High School. James Van Alst, Main Rd., Centerport, archt., adv. ENR 1/4.

Tex., Hearne—HOUSING—B.A. 1/17—Hearne Housing Auth., Hearne, 60 low-rental housing units. $475,000. Plans deposit $50. John Linn Scott & Assoc., 406 W. 17 St., Austin, Zone 1, archts. CD 3/30.

† **Alaska, Wrangell**—SCHOOL—B.A. 1/17—Dpt. Interior, Alaska P. Wks., Juneau, school addns. $300,000.

▲ **Mass., West Bridgewater**—SCHOOL—B.A. 1/18—Town, Supt. Schools, 1 and 2 story, part bsmnt., brick, steel, concrete high school. $1,000,000. Plans deposit $40. Adden Parker, Clinch & Crimp, 177 State St., Boston, archts. Hubbard, Lawless & Blakely, 177 State St., Boston, engrs. CD 9/19.

▲ **Ont., St. Thomas**—HOSPITAL—B.A. 1/24—J. B. Bruce, chn., Elgin General Hospital Bd., St. Thomas, 6 story T-shaped, rein.-con., brick hospital. Approx. $1,500,000. Govan, Ferguson, Lindsay, Kaminker, Maw, Langley & Keenleyside, 515 Jarvis St., Toronto, archts.

▲ **Tex., Galveston**—SCHOOLS—B.A. 2/2—Galveston Independent School Dist., c/o Bd. Trustees, 5200 N. Alamo St., 2 Senior High Schools, one for White Students in area between Avenues O and P and One Half and 41 and 43 Sts., the other for Negroes, on property between G and I and 30 and 32 Sts. Approx. $4,000,000. Preston Geren, Neil P. Anderson Bldg., Fort Worth, archt. CD 12/14.

▲† **N. M., Las Cruces**—HOUSING UNITS—Bids Asked in February—U. S. Eng., Box 1538, Albuquerque, 235 housing units, incl. 40 duplexes with 80 sq. ft. floor space and 20 duplexes with 875 sq. ft. floor space. $2,500,000. W. C. Kruger & Assoc., 227 E. Palace Ave., Santa Fe, archts.

▲ **Pa., Chester**—HOUSING—Bids Asked—Chester Housing Auth., Wm. Penn Village, Chester, housing $1,100,000. G. Morris Whiteside 2nd, Sharon Hill, archt. CD 10/25.

LOW BIDDERS

Fred S. Macomber, 818 Melrose Ave., Low Bidder, **$352,000**. 50 frame, stucco low-rent housing, ARVIN, CALIF. Housing Auth. of Kern Co., 517 Roberts Lane, Bakersfield, Bids Dec. 13.

Harvey & Rose 11 N. 5 Ave., Arcadia, Calif., Low Bidder, **$620,000**. Cement block housing, Proj Cal 26-1. 26-2, 26-4, at Ceres, Oakdale and Turlock, MODESTO, CALIF. Public Housing Auth. of Stanislaus Co., 829 13 St., Modesto. Bids Dec. 19. CD 11/24.

▲ Carl N. Swenson & Williams & Burrows, 10 California Dr., Burlingame, Calif., Low Bidder, **$2,881,500**. 62 one and two story frame bldgs. incl. 400 housing units, Proj. Cal. 5-2, SACRAMENTO, CALIF. Housing Auth. of City of Sacramento, 816 Revere St. Bids Dec. 20. CD 11/29.

Alliance Constr. Co. 308 Monterey Rd., South Pasadena. Low Bidder. **$416,859**. 1 story, concrete art and music bldg., SANTA MONICA, CALIF. Santa Monica Bd. Educ., 1333 6 St. Bids Dec. 15. CD 12/5.

Ashby & Opperman, 1606 G St., Bakersfield. Low Bidder. **$423,567**. Frame, stucco school, Taylor and Tyler Sts., TAFT, CALIF. Taft Elementary School Dist., Taft. Bids Dec. 14. CD 11/29.

State Bd. Control, Des Moines, Ia., rejected bids Dec. 5, school for feeble minded at State Hospital, GIENWOOD, IA. **$750,000**. Will re-advertise. CD 11/9.

Federal Engineering & Constr. Co., 1117 E. 47 St., Kansas City, Mo. Low Bidder. **$222,628**. Overhead line and sub-station installations, KANSAS CITY, KAN. Bd. P. Utilities. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr. Bids Nov. 29. CD 11/24/46.

COLE

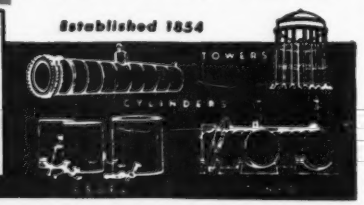
TANK DESIGNING BACKED BY 95 YEARS EXPERIENCE

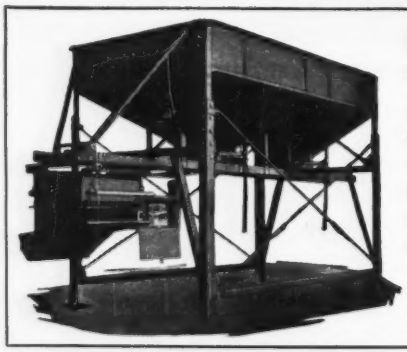
● Cole has specialized in the design, fabrication, and erection of elevated tanks for four generations. This long experience enables us to handle your assignment with dispatch, and to your complete satisfaction.

Cole builds tanks, towers, vessels, cylinders, bins, etc., to your specifications — any size, any shape, any metal. Send us your inquiries. Write for catalog—"Tank Talk."

R.D. COLE MANUFACTURING CO.
NEWNAN, GA.

Established 1854





Winslow BINANBATCH
—Reduces Your Job Cost
Use with a
10S- 11S- 14S- 16S Mixer

Complete—with scale for two or three aggregates.
With two or three overhead storage bins.
For use on culvert—bridge—curbing—foundation jobs.
Wherever above size mixers are in operation.
Prompt Delivery — Write or Wire

Mfd by
WINSLOW SCALE CO.
TERRE HAUTE, IND.
Distributors Located throughout U. S.

UNDERPINNING AND FOUNDATION CO
FOUNDED 1909

FOUNDATIONS
PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS
No Job Too Large - None Too Small

ENGINEERS & CONTRACTORS
155 EAST 44th STREET, NEW YORK

▲ Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore, Md. Low Bidder. **$6,370,000.** Rebuilding 3 story, 75x674 ft. infirmary, to be increased to 5 story bsmnt. at City Hospital, Eastern Ave., BALTIMORE, MD. City, R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Baltimore, Zone 2. Bids Dec. 20. CD 11/29.

▲ Piracci Constr. Co., 2552 Woodbrook Ave., Baltimore Md. Low Bidder. **$1,249,500.** (1st phase) 6 story court house addn., alterations, BALTIMORE, MD. City, R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Zone 2. Bids Dec 20. CD 12/7.

▲ Davis Constr. Co., 320 W. 24 St., Baltimore 18, Md. Low Bidder. **$1,666,000.** 1 story, brick, approx. 1,313,000 cu. yd. admission bldg. at Spring Grove State Hospital, CATONSVILLE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 2. Bids Dec. 21. CD 12/13.

State Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, rejected bids Dec. 1, L. B. **$328,000,** boiler house at Mt. Wilson State Hospital, MT. WILSON, MD. CD 12/8, under LB.

Belli Co., Broad St. Bank Bldg., Trenton, N. J. Low Bidder. **$924,000.** 102 apartments along John Fitch Way, TRENTON, N. J. Trenton Housing Auth., 875 New Willow St. Bids Dec. 20. CD 11/22.

Eugene Higgins, Inc., 610 Third Ave., New York, Low Bidder. **$819,910,** school, Main St., HUNTINGTON, N. Y. Bd. Educ., Union Free School Dist. 3, Huntington. Bids Dec. 13. CD 11/21.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Low Bidder. **$741,350.** 100-bed hospital, MONROE, N. C. Union County Memorial Hospital, J. Ray Shute, chn., Monroe. Bids Dec. 19. CD 11/16.

H. E. Cummins Co., Bass Bldg., Enid, Okla., Low Bidder. **$477,600,** est. $450,000 Women's ward bldg.; **$462,000,** est. $350,000; men's ward bldg. at Western Oklahoma State Hospital, SUPPLY, OKLA. Bd. of Affairs, Capitol, Oklahoma City. Bids Dec. 19. CD 12/11.

▲ W. & W. Constr. Co., Tri States Bldg., Tulsa 2, Okla. Low Bidder. **$403,135,** est. $345,000, female infirmary bldg.***Cross Constr. Co., Kennedy Bldg., Tulsa 2, Okla **$440,000,** est. $420,000, acute service bldg.***Tankersley Constr. Co., First Natl. Bldg., Oklahoma City 2, Okla. **$438,680,** est. $345,000, male infirmary bldg., all at Eastern Oklahoma State Hospital, VINITA, OKLA. Bd. Affairs, Capitol, Oklahoma City. Bids Dec. 19.

M. & L. Constr. Co., Inc., Pennway and Cottman Sts., Phila. Low Bidder. **$477,777.** Female employees quarters at Embreeville State Hospital, EMBREEVILLE, PA. General State Auth., 18 and Herr Sts., Harrisburg. CD 12/7.

D. R. Selley, 409 4th Ave. S., Nashville, Tenn. Low Bidder, **$876,282,** 2 schools, CLARKSVILLE, TENN. City, City Hall. Bids Dec. 20. CD 12/1.

Sam Melson, Shelbyville, Tenn. Low Bidder. **$445,700.** School, PULASKI, TENN. Giles Co. Bd. Educ., Pulaski. CD 11/10.

City, Anson, cancelled bids to have been opened Dec. 19, hospital, ANSON, TEX. Approx. **$300,000.** Will re-advertise. CD 11/28.

Premont Independent School Dist., Premont, Tex., cancelled bids to have been opened Dec. 20, steel frame Junior High School, PREMONT, TEX. **$350,000.** Will re-advertise. CD 12/6.

J. G. Hughes Constr. Co., Box 902, Brownsville, Tex. Low Bidder. **$766,700,** est. $745,000. 100 masonry dwelling units for total 50 separate bldgs., concrete slab fdn., SAN BENITO, TEX. San Benito Housing Auth., San Benito. Bids Dec. 20. CD 11/28.

Castle Constr. Co., Grottoes, Va., Low Bidder. Approx. **$409,337,** gymnasium at Virginia School for Deaf and Blind, STAUNTON, VA. State of Virginia, Richmond. Bids Dec. 12. CD 11/3.

▲ Anglin-Norcross Corp. Ltd., 892 Sherbrooke St. W., Montreal, Que. Low Bidder. Approx. **$5,889,000.** Superstructure Dominion Bureau of Statistics Bldg., Tunneys Park Development, OTTAWA, ONT. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Dec. 13. CD 11/20.

CONTRACTS AWARDED

▲ G. A. Paul Constr. Co., 14 Bonita Dr., Birmingham, Contract Awarded. **$4,034,902.** 500 housing units, Proj. ALA 1-16, BIRMINGHAM, ALA. Birmingham Housing Auth., 600 N. 24 St. Bids Dec. 15. CD 12/20, under LB.

▲ J. F. Holley, 905 6 Ave. N., Birmingham, Contract Awarded. **$1,289,000,** housing, Proj. Ala. 49-2; Sullivan, Long & Hagerty, Bessemer, **$1,824,800.** 220 housing, Proj. Ala. 49-3. GADSDEN, ALA. Gadsden Housing Auth., Gadsden. Bids Dec. 14. CD 12/20, under LB.

Lawrence Constr. Co., 3020 V St., Sacramento, Calif. Contract Awarded, **$546,749.** Del Paso Man or School, SACRAMENTO, CALIF. Arcade Elementary School Dist., Rte. 7, Box 3685, Sacramento. CD 12/5, under LB.

▲ F. W. Spencer & Son, Inc., 149 Gough St., San Francisco, Calif. Contract Awarded. **$617,437.** Plumbing for 13 and partial 14 story rein.-con., structural steel Medical Sciences Bldg.***Ets—Hokin & Galvan, 551 Mission St., San Francisco, Calif., **$543,992,** electrical work***The Scott Co., 243 Minna St., San Francisco, Calif., **$568,688,** heating, vent-lating, air-conditioning and refrigeration, SAN FRANCISCO, CALIF. Bd. Regents, University of California, Berkeley. Grand total $1,690,117. CD 11/28, under LB.

Trieste Constr. Co., Delray Beach. Contract Awarded. **$113,766.** electric power plant addn., LAKE WORTH, FLA City. Bids Dec. 15. CD 11/29.

▲ Geo. H. Rommel Co., 958 Logan St., Louisville, Ky. Contract Awarded. **$6,358,177.** West Housing (Negro) Proj. K 1-6, LOUISVILLE, KY. Municipal Housing Comn., Second and York Sts., Louisville, Zone 3. Awarded Dec. 22. CD 12/4.

▲ John A. Johnson & Sons, 270 41 St., Brooklyn, N. Y. Contract Awarded. **$1,093,000.** 150 unit housing, Heckman Terrace Annex, Rosebery St., PHILLIPSBURG, N. J. Phillipsburg Housing Auth., Municipal Bldg., Phillipsburg, N. J. Bids Dec. 7. CD 12/15, under LB.

▲ Robert E. McKee, Inc., Box 1706, Santa Fe, N. M. Contract Awarded, **$1,079,700.** 32,000 sq. ft. laboratory Inv. No. 291-51-43, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids Dec. 12.

Cowen Constr. Co., 214 N. Broadway, Shawnee, Contract Awarded. **$167,481.** power plant and equip. at Granite Reformatory, GRANITE, OKLA. Board of Affairs, Capitol, Oklahoma City, Zone 5. Bids Nov. 28. awarded Dec. 14. CD 11/14.

Navarro Corp., 6219-21 Broad St., Pittsburgh, Pa. Contract Awarded. **$604,000,** est. $700,000, general const. men's dormitory at Indiana State Teachers College, INDIANA, PA. General State Auth., 18 and Herr Sts., Harrisburg. (**Correction**—contractor.) CD 11/24, under CA.

A. F. Smiley Constr. Co., 115 Trenton St., Pawtucket, Contract Awarded. **$325,000.** Gymnasium addn. to Junior High School, WOONSOCKET, R. I., City, c/o Mayors Office, Woonsocket. Bids Nov. 21, awarded Dec. 9. CD 11/1.

▲ Marchant Bros., Box 545, Mercedes. Contract Awarded **$1,084,492,** 128 housing units, Tex. 7-5; **$1,046,487,** 122 housing units, Tex. 7-4, BROWNSVILLE, TEX. Brownsville Housing Auth., Brownsville. Bids Dec. 14, awarded Dec. 21. CD 12/19, under LB.

▲ C. C. Hinchberger Constr. Co., P. O. Box 134, Corpus Christi, Tex. Contract Awarded. **$1,494,497,** est. $1,200,000. 200 Negro FHA-aided low rental housing units, CORPUS CHRISTI, TEX. Bids Dec. 18. CD 12/6, under LB.

▲ Roden Constr. Co., 3617 Collinwood St., Fort Worth, Tex. Contract Awarded. **$1,114,000.** 150 dwelling units, 70 bldgs., north of Wichita River, WICHITA FALLS, TEX. Wichita Falls Housing Auth., Wichita Falls. Bids Dec. 11. CD 12/18, under LB.

▲ Irons & Reynolds, 1724 H St., N. W., Wash., D. C. Contract Awarded, **$1,061,500.** Fine arts bldg. at Mary Washington College, FREDERICKSBURG, VA. State of Virginia, Richmond. Bids Dec. 14. CD 12/22, under LB.

▲ Mowat Bros. Constr. Co., 2833 Eastlake Ave., Seattle, Wash. Contract Awarded. **$1,337,000.** 105 housing units in Baker Heights addn., EVERETT, WASH. Everett Housing Auth. CD 12/20, under LB.

▲ Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Contract Awarded. **$1,249,225,** 3 units, overall frontage 342 lin. ft., steel, brick, vocational school, TORONTO, ONT. York Twp. Bd. Educ., 365 Weston Rd. Bids Nov. 20. Awarded Dec. 19. CD 10/24.

COMMERCIAL BUILDINGS

BIDS ASKED

Ark., Camden—HOTEL—B.A. 1/10—Camden Hotel Co., Camden, 6 story hotel. $600,000. Plans deposit $25. Ginochio, Cromwell & Assoc., Hall Bldg., Little Rock, archts. CD 2/16.

Tenn., Memphis—HOME FOR INCURABLES—B.A. 1/10—Com. of Kinos' Daughters and Sons of Tennessee, c/o Walk C. Jones and Walk C. Jones, Jr., archts., 1215 Poplar St., 3-wing home for incurables addn., 1467 E. McLemore St. $500,000. CD 4/7.

▲ **Okla., Enid**—HOSPITAL—B.A. 1/11—St. Marys Hospital, Sisters of Most Precious Blood, Enid, 250-bed hospital unit, central heating sys. $1,000,000. Plans deposit $50. Extended date, Lorentz, Schmidt, McKay & Peddie, 1823 E. 2nd St., Wichita, Kan., archts. CD 12/6.

▲ **Calif., Los Angeles**—HOSPITAL, etc.—B.A. 1/15—St. Vincent's Hospital, 2131 W. 3 St., 5 story, rein.-con. hospital unit college of nursing, $1,500,000. Austin, Field & Fry, 2311 W. 3 St., archts. CD 12/12.

▲ **Minn., Breckenridge**—HOSPITAL—B.A. 1/16—Franciscan Sisters of the Immaculate Conception, Little Falls, 5 story, 42x214 ft. and 44x48 ft. hospital. $1,700,000. F. W. Jackson, St. Cloud, archt.

Ill., Chicago—OFFICE—Bids Asked—Zack Frank, Inc., Western & Granville Sts., Chicago, Zone 45, 2 story, 25,000 sq. ft., concrete, brick, stone office, $300,000. Bernard Krauss, 179 W. Washington St., Zone 2, archt.

Ill., Cicero—APARTMENT—Bids Asked—Dr. Leonard Boke, c/o E. G. Halstead, archt., 840 N. Michigan St., Chicago, Zone 11, three 3 story, 42-suite, brick apartments, $300,000.

▲ **Tenn., Memphis**—HOSPITAL—Bids Asked—Baptist Memorial Hospital, 899 Madison Ave., 13 story, 250 bed hospital addn. $5,500,000. Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O., and Walk C. Jones-Walk C. Jones, Jr., 1215 Poplar Ave., archts. CD 2/4/43.

SOON LETS CONTRACT

Ill., Chicago—SCHOOL—St. Columbia Parish, Green Bay Ave. and 134 St., Zone 33, soon lets contract brick, stone, concrete school. $300,000. Edo J. Belli, 850 S. Dearborn St., Zone 3, archt.

Ill., Schiller Park—SCHOOL—St. Beatrice Parish, c/o Edo J. Belli, 850 Dearborn St., Chicago, Zone 3, soon lets contract 1 story steel, stone, brick, concrete school. $300,000.

LOW BIDDERS

▲ Lembke Constr. Co., 1519 N. 5 St., Albuquerque. Low Bidder. **$1,847,175,** est. $750,000, hospital. SANTA FE, N. M. St. Vincent's Hospital, 210 E. Palace Ave. Bids Dec. 15. CD 11/27.

Sam P. Maury Constr. Co., 680 Adams St., Memphis. Low Bidder. **$666,725.** 7 story steel, concrete Y. M. C. A. bldg. addn., MEMPHIS, TENN. Young Mens Christian Assn., 245 Madison St., Zone 1. Bids Dec. 15. CD 11/20.

American Constr. Co., Rusk Bldg., Houston, Low Bidder, **$304,000.** polio wards, Hospital unit, HOUSTON, TEX. Jefferson Davis Hospital, 1801 Buffalo Dr.

▲ Robert E. McKee General Contractor, Inc., Box 2848, Dallas, Tex. Low Bidder. **$1,221,000,** est. $1,000,000. 10 story, bsmnt. bank and office, TEMPLE, TEX. First Natl. Bank, Temple. Bids Dec. 19. CD 12/8.

CONTRACTS AWARDED

▲ Peyton Higgison, 59½ St. Francis St., Mobile, Ala., Contract Awarded. **$1,075,000,** boys high school, MOBILE, ALA. McGill Institute, 252 Government St., Mobile, Ala. Bids Dec. 19. CD 12/7.

Arnold Constr. Co., 962½ St. Atlantic Blvd., Los Angeles. Contract Awarded. **$839,040.** 120 frame, stucco dwellings, Burke St., etc. RIVERA, CALIF. Parsons Park, 962½ S. Atlantic Blvd., Los Angeles.

▲ Swinerton & Walberg, 225 Bush St., San Francisco, Calif. Contract Awarded. **$1,600,000.** 3 story, bsmnt., rein.-con., steel Woolworth Bldg., SAN FRANCISCO, CALIF. F. W. Woolworth Co., 405 Montgomery St., San Francisco. John J. Gould, c/o owner, engr. CD 11/5/43.

Christensen & Lyons, 3454 Harlan St., Oakland. Contract Awarded. **$607,400.** 86 residences, Via Chiquita, Via Sanardo and Via El Cerrito, SAN LORENZO, CALIF. San Lorenzo Homes Co., 100 Bockman Rd., San Lorenzo.

San Lorenzo Development Co., 422 Hathaway St., San Lorenzo. Owner Builds. **$419,600.** 50 residences, Hathaway Ave., Hunter and Robscott Aves, SAN LORENZO and HAYWARD, CALIF.

Universal, Inc., 529 Pearl St., Jacksonville, Owner Builds. **$322,000.** 45 family homes, at Spring Park Heights, southside of Jacksonville, JACKSONVILLE, FLA. Awarded 12/14.

Witwicki Home Builders, 4930 N. Mango St., Chicago, Zone 30. Owner Builds. **$320,000.** 32 residences in 5400 block of Neenah, Natchez, Nagle Aves., Zone 30, CHICAGO, ILL. A. J. Del Bianco, 4938 Irving Pk., Chicago, Zone 30, archt.

▲ J. Graham Brown, Brown Hotel, 4 and Broadway, Louisville, Ky. Separate Contracts. **$3,500,000.** 16 story office, LOUISVILLE, KY. CD 8/4.

Lawrence Constr. Co., 2503 St. Paul St., Baltimore, Zone 18. Contract Awarded. **$300,000.** stone, concrete, steel church, BALTIMORE, MD. St. Mathews Evangelical Lutheran Church, Mayfield and Norman Aves., Baltimore. Harold E. Wagoner, Architect's Bldg., Phila., Pa., archt. CD 3/3/45.

▲ F. J. Corr, Inc., 1130 Sheridan St., Lansing, Mich. Contract Awarded. **$1,230,000.** 4 story, brick, steel, concrete Department Store, Washington Ave. and Kalamazoo St., LANSING, MICH. J. C. Jenny Co., lessee, S. Washington St., Lansing, Mich. Bids Dec. 8. CD 11/30.

Swan Constr. Co., 8615 Laclede Station Rd., Affton, St. Louis, Mo. Contract Awarded, 1 story, 105x200 ft., brick, steel, concrete, tile shopping center and 1 story, 50x164 ft. supermarket bldg., incl. 6 stores, parking, etc., 8400 Gravois Rd., AFFTON (ST. LOUIS 23, P. O.) MO. Business Properties, Inc., (Fred P. Rapp Super Market Stores), Fred P. Rapp, 1450 S. Vandeventer Ave., St. Louis, Zone 10. CD 12/11.

Estrin Constr. Co., 828 E. 9 St., Kansas City 6, Mo. Contract Awarded. Approx. **$500,000.** 1 story, 16,110 sq. ft. office on 10 acre tract at plant site, KANSAS CITY, MO. Black, Sivalls & Bryson, Inc., 7500 E. 12 St., Kansas City 3, Mo. Manuel Morris 537 Gladstone St., Kansas City 1, Mo., archt.

Baerveldt & Honig Constr. Co., 4030 Chouteau Ave., St. Louis 10, Mo., Contract Awarded, 1 story, brick, concrete office and warehouse, 615 South Taylor Ave., ST. LOUIS, MO. R. J. Honig, 4030 Chouteau Ave., St. Louis, Zone 10. Louis H. Baerveldt, 9549 Baltimore, Overland, St. Louis, Zone 14, archt.

▲ John McShain, Inc., 17 and Spring Garden Sts., Phila., Pa. Contract Awarded. **$1,017,200,** est. $1,000,000. Hospital addn., alterations PRINCETON N. J. Princeton Hospital, 253 Witherspoon St. Bids 9/19 rejected. Bids Oct. 31. CD 11/2, under LB.

▲ Southtown Investment Corp., c/o Beerman Realty Co., Commercial Bldg., Dayton, Owner Builds. **$4,500,000.** One 200x500 ft., two 200x400 ft., two 200x300 ft. bldgs., shopping center, Kettering Blvd. between Dorothy Lane and Bighill Rd., DAYTON, O.

National Concrete Fireproofing Co., Terminal Tower, Cleveland. Contract Awarded. Approx. **$350,000.** 2 story, 50x150 ft. incl. bsmnt., rein.-con. office, HURON, O. Eastern States Farmers Exchange, Huron. A. E. Baxter Engr. Co., Electric Bldg., Buffalo, N. Y. engr. and archt. Awarded Dec. 11.

M. DeBartolo Constr. Co., 216 Alexander Ave., Youngstown. Contract Awarded. Approx. **$750,000.** 12 store, 140x425 ft. brick shopping center, E. Midlothian Blvd. and Youngstown-Poland Rd., parking at front and rear for 500 cars, STRUTHERS, O. Midlothian Shopping Center, Inc., Edward J. DeBartola, pres., c/o contractor.

D. C. Bass & Sons, Bass Bldg., Enid, Okla. Contract Awarded. **$558,000,** est. $500,000. Office bldg., ENID, OKLA. Champlin Refining Co., Enid. Bids Nov. 13, awarded Dec. 6. CD 11/9.

Cook-Anderson Co., Beaver. Contract Awarded, Approx. **$400,000.** boys dormitory, BEAVER FALLS, PA. Geneva College, Beaver Falls. Bids Oct. 3, awarded Dec. 14. CD 9/20.

W. R. Hawn & Jack Neece, 10418 Garland Rd. Owner Builds. Approx. **$300,000.** 35 dwellings in area off Buckner Blvd., DALLAS, TEX. CD 12/8.

Arlington Heights West, Inc., c/o Arlington Heights, Fort Worth. Owner builds. Approx. **$300,000.** 80 low-priced dwellings, FORT WORTH, TEX. CD 12/14.

Clarence Epperley, 3501 Meadowbrook St. Contract Awarded. **$585,000.** Church and educational bldg., FORT WORTH, TEX. Polytechnic Methodist Church Congregation, Polytechnic Heights, 3017 Avenue E. CD 12/11.

Burns Lumber Co., 9520 Humble Rd., Purchase and Hire. Approx. **$325,000.** 40 dwellings, Greenland Village, HOUSTON, TEX. CD 12/1.

Bennie Strickland, 3402 Sunset Blvd. Own Forces. **$320,000.** 40 masonry frame dwellings, HOUSTON, TEX. CD 9/20.

Robert E. Maxey, Lubbock, Tex., Contract Awarded. **$320,000.** 3 story masonry hotel addn., LUBBOCK, TEX. Hilton Hotel, Lubbock. Awarded Dec. 21. CD 12/12.

▲ Union Real Estate Corp., c/o Joskes of Texas, Alamo Plaza. Own forces. **$1,000,000.** rein.-con. bsmnt. mercantile store addn., SAN ANTONIO, TEX.

Tolboe & Harlin Constr. Co., Provo. Contract Awarded. **$350,000** 100x200 ft. store to house the J. C. Penney Co. Store and the Pay Less Drug Store, PROVO, UTAH. Pro-Real, Inc., Provo. Scott & Beecher, Dooly Bldg., Salt Lake City, archts.

M. R. Chappell, Westmont. Owner Builds. **$480,000.** 60 dwellings, WESTMONT, N. S.

Hertz Constr. Co., 192 S. Kingsway, Toronto. Own forces. Approx. **$950,000-$975,000.** 10 or 12 unit apartment, each structure will have 16 suites, 2 story, brick constr., at Oakville Acres, Wilson Ave. Dist., North York, TORONTO, ONT.

Leamill Constr. Co., 841 Milwood Rd., Toronto. Owner builds. **$500,000.** 6 story, 65-suites brick, steel apartment, Bayview and Moore Aves., TORONTO, ONT. Barrnett & Rider, 300 Bessborough Dr., archts.

INDUSTRIAL BUILDINGS

BIDS ASKED

Fla., Tallahassee—BUS TERMINAL—B.A. 1/9—Modern Coach Corp., c/o James A. Stripling & Assocs., archts., Centennial Bldg., bus terminal. CD 10/2, under LB.

Ala., Chickasaw—PLANT—B.A. About 1/15—Alabama Power Co., 600 N. 18 St., Birmingham, superstructure for steam electric plant. Approx. $100,000. Jack Smith, Frank Nelson Bldg., Birmingham, archt. CD 1/31.

Tex., Odessa—PLANT—B.A. 1/23—Odessa American, Odessa, newspaper printing plant. $100,000. L. V. De Bolt, c/o owner, archt. CD 5/31.

Ill., Chicago—FACTORY—Bids Asked—Northern Electric Co., 5234 N. Kedzie St., Zone 25, 90,000 sq. ft., brick factory top addn., asphalt roof. $90,000. Frank L. Glick, 3938 N. Central Ave., Zone 34, archt.

Ill., Chicago—FACTORY—Bids Asked—Wheelco Instruments Co., 847 W. Harrison St., Zone 7, factory addn. $80,000. Nathaniel Koenigsberg, 35 S. Dearborn St., Zone 3, archt.

Ill., Chicago—FACTORY—Bids Asked—Zenith Co., 1500 N. Kostner St., Zone 51, impry. recently purchased bldg. for mfg. radio cabinets. $90,000. Friedman, Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts.

Ill., Franklin Park—FACTORY—Bids Asked—Fiat Metal Mfg. Co., 9301 Belmont Ave., 1 story, 65x225 ft., steel, brick factory addn. $135,000. Marx & Lutz, 2734 N. Mildred Ave., Chicago, Zone 39, archts.

Tex., Robstown—GARAGE—Bids Asked—Jennings Chevrolet Co., Robstown, auto garage, sales, service, storage. $125,000. Stanley W. Bliss, 818 Littlefield Bldg., Austin, archt.

SOON LETS CONTRACT

Ga., Decatur—WAREHOUSE—Gate Rubber Co., c/o Henry L. Eggers, archt., 627 S. Carondelet St., Los Angeles, Calif., soon lets contract warehouse. Approx. $82,000.

Ind., Hammond—FACTORY PERSONNEL—Standard Railway Equip. Co., Columbia Ave., soon lets contract 60x250 ft. personnel bldg. on factory premises. $150,000. Lester B. Knight Assoc., 600 W. Jackson, Chicago 6, Ill., archts.

Ia., Sioux City—PACKING PLANT—Swift & Co., 4115 S. Packers St., Chicago, Ill., soon lets contract meat packing plant addns. CD 12/5.

Wis., Milwaukee—FACTORY—Nunn-Bush Shoe Co., 2822 N. 5 St., soon lets contract 2 story, 67x110 ft., concrete, steel, brick factory addn. F. F. Droishagen-Boynton & Assoc., 647 W. Virginia St., Zone 4, archts. CD 5/29/48.

LOW BIDDERS

James E. Green, Johnson City, Tenn. Low Bidder. **$188,640,** warehouse and office, BRISTOL, VA., Rutherford Freight Lines, c/o Alfred H. Abernethy, archt., Johnson City, Tenn.

CONTRACTS AWARDED

Glidden Naval Stores Div. of Glidden Co., Berea and Madison Sts., Cleveland, O. Owner builds, $200,000. addnl. bldgs., facilities at Jacksonville-Norwood Plant, JACKSONVILLE, FLA. Dr. J. P. Bain, c/o owner, research engineer. Awarded Dec. 13.

Specter & Sons, 575 S.W. 22 Ave., Miami, contract Awarded, $100,000. warehouse. MIAMI, FLA. Mayflower Plumbing Supply Co., 625 N.W. 5 St., Jules P. Channing & Assocs., 1575 Washington Ave., Miami Beach, engrs.

Paul R. Thomas, Inc., 13377 W. Dixie Hy., North Miami, Contract Awarded. Approx. $85,000. warehouse, 550 N.W. 37 Ave. MIAMI, FLA. Ro-Ed. c/o Jules P. Channing & Assocs., engrs., 1575 Washington Ave. Miami Beach.

P & W Constr. Co., Hurt Bldg., Atlanta, Contract Awarded, Approx. $82,000. warehouse. ATLANTA, GA. Herschell's Fabrics, Inc., c/o contractor.

J. D. Roberts, 1629 West View Dr., S.W., Atlanta, Contract Awarded, $85,000. warehouse, 920 Murphy Avenue, ATLANTA, GA. Associated Investment Co., c/o contractor.

Superior Concrete Products Co. Mt. Airy, N. C. Owner Builds. $250,000. concrete block mfg. plant. AUGUSTA, GA.

A. K. Adams, 542 Plum St., N.W. Atlanta, Contract Awarded. Approx. $300,000. Rayon weave mill, CLARKESVILLE, GA. United Merchants & Manufacturers, Inc., c/o Robert & Co. Assocs., 96 Poplar St. N.W., Atlanta, archts. Bids 11/28. CD 11/16.

H. M. Pafford Jr., Waycross, Contract Awarded. $85,000. diesel repair shop, etc. WAYCROSS, GA. Atlantic Coast Line R.R. Co., R. L. Groover, ch. engr. Wilmington, N. C. Bids Dec. 15. CD 12/7.

Adache & Case Eng. Co., 3614 Euclid Ave., Cleveland, O. Contract Awarded. $525,000. 7 story, 36x55 ft. concrete base soy bean plant expansion with boiler house and steam facilities, CHICAGO, ILL. Glidden Co., Madison and Berea Rd., Cleveland, O. Adache & Case Eng. Co., 3614 Euclid Ave., Cleveland, O., archts. Awarded Dec. 14.

Clearing Industrial Dist., 38 S. Dearborn St., Chicago 3, Ill. Contract Awarded. $800,000. 109,000 sq. ft. musical instruments factory, equip., MELROSE PARK, ILL. Gulbranson Co., Melrose Park, Ill. John S. Cromelin, 6455 S. Central St., Chicago 38, Ill., archt.

Clearing Industrial Dist., 38 S. Dearborn St., Chicago, 3, Ill. Contract Awarded. $325,000. 40,500 sq. ft. steel, brick, concrete factory, MELROSE PARK, ILL. Miller Motor Co., 4027 Kedzie St., Chicago, 18, Ill. John S. Cromelin, 6455 S. Central St., Chicago, 38, Ill., archt. Awarded Nov. 30.

Clearing Industrial Dist., 38 S. Dearborn St., Chicago, 3, Ill. Contract Awarded. $150,000. Factory, MELROSE PARK, ILL. Harry Seybold Corp., 555 W. Washington St., Chicago, 6, Ill. John S. Cromelin, 6455 S. Central St., Chicago 38, Ill., archt. Awarded Dec. 1.

Clearing Industrial Dist., Inc., 38 S. Dearborn St., Chicago, 3, Ill. Contract Awarded. $800,000. (Calendars) factory, MELROSE PARK, ILL. John Braumgarth Co., 855 W. Randolph St., Chicago. John S. Cromelin, 6455 S. Central St., Chicago, Zone 38, archt. Awarded Dec. 1.

Fred Harbor & Son, National Bank Bldg., Peoria. Design and Construct. $80,000. 1 story, plant addn., PEORIA, ILL. Bemis Bros. Bag Co., foot of Sloan St. Awarded 12/8.

Ernest F. Carlson, 1694 Main St., Springfield, Contract Awarded $200,000. factory addn., Nonotuck St. FLORENCE, MASS. Prophylactic Brush Co., Pine St. CD 12/14.

Steenberg Constr. Co., 1371 Marshall Ave., Contract Awarded. Est. $125,000, 1 story, 120x196 ft. truck terminal, 2523 Wabash Ave., ST. PAUL, MINN. Mueller Transfer Co., 122 S.E. 8 St., Minneapolis, L. J. Johnson, 217 Hamm Bldg., archt.

March-Jarvis Co., Inc., 718 Locust St., St. Louis, Mo., Contract Awarded $175,000. brick, concrete warehouse addn., 3101 Arsenal St., ST. LOUIS, MO. Lammert Furniture Co., 911 Washington Ave., St. Louis, Zone 1. Otto E. Heinicke & Co., Fullerton Bldg., 122 N. 7 St., St. Louis, Zone 1, engrs.

March-Jarvis Co., Inc., 718 Locust St., St. Louis 1, Mo., Contracts Awarded. 100x107 ft., brick, steel joist, precast stone warehouse addn. to printing plant, ST. LOUIS, MO. World Color Printing Co., 420 De-Soto Ave. St. Louis 7, Mo. Otto E. Heinecke & Co., Fullerton Bldg., 122 N. 7 St., St. Louis, Zone 1, engrs.

Willingham Constr. Co., Inc., 5701 Vernon Ave., St. Louis 12, Mo., Contract Awarded. 1 story, 60x125 ft. concrete block and fdn. warehouse and assembling bldg., 4601 McRee Ave. ST. LOUIS, MO. Export Packing Co., Inc., 4607 McRee Ave., St. Louis 10, Mo. G. R. Kiewitt, 122 W. Lockwood St., Webster Groves, St. Louis 19, Mo., archt.

F. K. Phipps, Tabor City. Contract Awarded. $200,000. rebuild grocery warehouse. WHITEVILLE, N. C. G. V. Singletary & Sons, Whiteville.

R. G. Hastings Constr. Co., Rosedale Dr. Contract Awarded. $436,000. 90,000 sq. ft. warehouse and 60,000 sq. ft. factory addn., DAYTON, O. Dayton Rubber Co., 2342 W. Riverview St. Geyer & Neuffer, 30 S Ludlow St., archts. Awarded Dec. 6.

▲ Albert Higley Co., 2036 E. 22 St., Cleveland. Contract Awarded. $1,200,000, 1 story, 130,000 sq. ft., 250x440 ft. structural steel masonry plant, concrete base, EUCLID, O. Reliance Electric & Engineer Co., 1088 Ivanhoe Rd., Euclid. Arthur E. Rowe & Assoc., 1743 E. 25 St., Cleveland, engrs. and archts.

Koppers Co., Inc., Koppers Bldg., Pittsburgh, Pa. Contract Awarded. Approx. $500,000. Plant for mfg. oxygen and nitrogen, on tract covering approx. 23 acres, BUTLER, PA. Air Reduction Sales Co., 60 E. 42 St., New York, N. Y. CD 12/7.

Robert E. Lamb & Son, Inc., 3429 W. Indiana Ave., Contract Awarded. $175,000. 1 story, 110x140 ft. x 55 ft., block, steel, concrete factory addn. PHILA., PA. F. J. Stokes Machine Co., Tabor Rd. and E. Adams Ave.

Stierly & Forster, Mont Clare, Contract Awarded. $89,000. 1 story, bsmnt., 85x115 ft., brick, steel mill addn., RED HILL, PA. Raeflex Mfg. Co., Red Hill. Charles Talley, Telford, archt.

Fort Worth Wholesale Merchandise Co., 5200 Bryce St. Own Forces. $525,000. Unit 3, 100,000 sq. ft. warehouse unit, FORT WORTH, TEX. CD 11/27.

Erwin-Newman Co., Almeda Rd., Contract Awarded. $118,325. industrial bldg., HOUSTON, TEX. C. O. Beeler Lumber Co., 2300 Pease St. CD 12/14.

S. N. & J. S. Adams, 4001 Westheimer St., Purchase and Hire, Approx. $100,000. warehouses (2nd), HOUSTON, TEX. CD 11/29.

Wise Contg. Co., 8 and Grace Sts., Richmond, Contract Awarded. $450,000. plant addn. RICHMOND, VA. Southern Biscuit Co., Inc., Terminal Pl., Richmond. Francisco & Jacobus, 511 5 Ave., New York, N. Y., consult. engrs. CD 10/30.

▲ Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill. Contract Awarded. Total est. $1,700,000. Steel for 12 oil storage tanks, pumphouse, manifold bldg., shatter bldgs., SUPERIOR, WIS. Lakehead Pipe Line Co., Superior.

▲ Foster Wheeler, Ltd., 81 Eastchester St., St. Catherines, Ont. Contract Awarded. Total est. approx. $5,000,000. installing catalytic cracking unit with auxiliary gas recovery plant and vacuum distillation unit, EDMONTON, ALTA. Imperial Oil, Ltd., 56 Church St., Toronto, Ont. CD 11/1.

Newman Brothers, 127 St. Paul St., Contract Awarded. $280,000. 1 story, 98x177 ft. warehouse with attached 2 story, 30x98 ft. office, 1 story, 122x190 ft. garage, both units steel, brick concrete fdns. in new industrial area, ST. CATHERINES, ONT. Direct Winters Transport, 235 Queen Way, Toronto. Awarded 12/16. CD 10/19.

Bernier et Gragne, Ltd., 460 Blvd. Bowien, Granby. Contract Awarded. Approx. $140,000. 1 story, 100x150 ft., steel fr. block brick factory addn. Descelles St. near River, TORONTO, ONT. Radio Eng. & Products Ltd., 4305 Iberville St., Montreal, Que.

E. & A. Zeppa, Portland Ave., Mimico, Contract Awarded, Approx. $110,000. 1 story, 96x300 ft., steel, factory concrete fdn., Queen Elizabeth Way, near Evans Ave., TORONTO, ONT. Edward Zeppa, 388 Indian Grove St.

Carter Constr. Co. Ltd., 419 Cherry St., Toronto, Contract Awarded. $350,000. 3 story, bsmnt., vacuum tube factory addn. and addni. story on present bldg., TORONTO, ONT. Canadian General Electric Co., 212 King St. W., Toronto. Awarded 12/16. CD 11/20.

La Cie de Construction des Boulevards du Quebec Ltee., Industrial Centre No. Five, Quebec City, Contract Awarded. Approx. $85,000. warehouse and office, QUEBEC CITY, QUE. Roofers Supply Co., Ltd., 1005 da la Canardiere St. CD 11/16.

UNCLASSIFIED

BIDS ASKED

† Maine—SUB-AQUEOUS PIPE LINE—B.A. 1/10—Fish & Wildlife Service, Dpt. Interior, 59 Temple Pl., Boston, 11, Mass., sub-aqueous pipe line to U. S. Fish & Wildlife Service, Boothbay Harbor, Inv. No. FW5-1731.

† O., Warren—FIRE PROTECTION—B.A. 1/10—Pub. Bldgs. Service, General Services Admin., General Services Bldg., 19 and F Sts. N.W., Wash. 25, D. C., installing fire protection requirements at Wardwell Yards Warehouse, Proj. No. 33-196. Plans deposit $5.

N. S., North Sydney—TRANSIT SHED—B.A. 1/10—Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., transit shed on dock. Approx. $250,000. Plans deposit $50. G. Brault, c/o owner, archt.

† West Virginia—FOOD PREPARATION—B.A. 1/11—Fish & Wildlife Service, Dpt. Interior, 59 Temple Pl., Boston, 11, Mass., food preparation bldg. and installing equipment therein at U. S. Fish Cultural Station, White Sulphur Springs.

Ont., Toronto—STRUCTURAL STEEL—B.A. 1/15—Chairman Toronto Transit Comn., 35 Yonge St., 479 tons temporary unfabricated structural steel for Section S-6 of Yonge St. Rapid Transit Route. Approx. $60,000. CD 1/9/46.

† New Mexico and Texas—TRANSFORMERS—B.A. 1/16—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Willard, outdoor transformer; outdoor distr. transformers; outdoor horn-gap switch with manually-gang-operated grounding blades; outdoor disconnecting switches; expulsion-type disconnecting fuse; underground-neutral circuit; outdoor potential transformers; outdoor-type current transformers for the Willard sub-station, Rio Grande Proj. Spec. DS-3252.

† Oregon—RAILROAD RELOCATION—B.A. 1/16—U.S. Eng., Pittock Block, Portland, construct facilities on relocated Southern Pacific R.R., CIVENG 35-026-51-132.

† Washington—TRANSFORMERS—B.A. 1/16—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars at shipping point or f.o.b. cars Odair, Wash., transformers with exchangers for Grand Coulee Power Plant, Columbia Basin Proj., Spec. DS-3257. L. N. McClellan, ch. engr.

† Calif., San Francisco—DRYDOCK CAISSON—B.A. 1/17—At Dist. P. Wks. Office, 12th Naval District, Federal Office Bldg., Civic Center, San Francisco, caisson for Drydock 2, San Francisco Naval Shipyard, NDY-23487, Spec. 25844. CD 12/14.

Kan., Lawrence—FIELD HOUSE—B.A. 1/17—State Bd. Regents, Hubert Brighton, secy., State House, Topeka, field house at University of Kansas. $750,000. Extended date. C. L. Marshall, State House, Topeka, state archt. CD 11/30.

† Wyoming—TRANSMISSION LINES—B.A. 1/17—Bureau Reclamation, Dpt. Interior, Cody, Thermopolis-Lovell and Garland-Lovell Transmission Lines, Missouri River Basin Proj., Spec. No. DC-3267; adv. ENR 1/4.

Calif., South Gate—TRAFFIC SIGNAL SYSTEMS—B.A. 1/18—State Div. Hys., P. Wks. Bldg., Sacramento, traffic signal sys., highway lighting and channelization on Firestone Blvd. at Boyo Ave. G. T. McCoy, Sacramento, state hy. engr.

† Wash., Arlington — SUPPORT TOWERS, etc. — B.A. 1/19—Officer in Charge of Constr. 13th Naval Dist., 1611 W. Wheeler St., Seattle, 12 antenna support towers, 13 towers for feeder bus sys., 10 pull-off towers, antenna lead-in supports, 12 concrete winch platforms, clearing, earthwork, etc. at Jim Creek Navy Communications Station, Spec. 21921. Plans deposit $30. CD 7/2/47.

Tex., Houston—ZOO BLDG.—B.A. 1/30—City, Parks and Zoo Dpt., City Hall, 900 Brazos St., pachyderm house for elephants, at Hermann Park Zoo. Plans deposit $25. L. Fugate, city engr. CD 8/25/49.

LOW BIDDERS

Hale Electric Co., Inc., 1105 Washington Bldg., Pittsburgh. Low Bidder. $199,077, est. $180,000. installing, converting electrical distr. sys. from D. C. to A. C. at Slippery Rock State Teachers College, SLIPPERY ROCK, PA. General State Auth., 18 and Herr St., Harrisburg. Bids Dec. 20. CD 12/7.

▲† Orlando Constr. Co., Coleman, Wis. Low Bidder, Schedule 1, 58 mi. Sioux-Falls-Brookings Transmission lines, $427,826, est. $417,023, Schedule 3, 69 mi. Armor-Fort Randall-Gavins Point transmission lines, $509,260, est. $459,676; Flora Constr. Co., 1717 E. Colfax Ave., Denver, Colo., Low Bidder, Schedule 2, 84 mi. Huron-Armour Transmission lines, $686,552, est. $602,706, Schedule 4, 89 mi. Gavins Point-Sioux Falls 115 kva transmission lines, $737,176, est. $637,712, Missouri River Basin Proj., Spec. DC-3243, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Huron. Bids Dec. 14.

General Electric Supply Corp., 1312 Live Oak St., Houston, Tex., Forest Lumber Industries, Inc., Shreveport, La., and Brazos River Transmission Corp., Bryan, Tex., Low Bidder, $107,000. Est. $100,000. 23 mi. transmission high-line between Caldwell and Bryan, city of CALDWELL, TEX. Bids Nov. 22. CD 11/15.

D. Janka, Matane, Low Bidder, $133,105, harbor repairs and improvs., PASPEBIAC, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids 12/13. CD 11/27.

CONTRACTS AWARDED

Interstate Power Co., 1900 Main St., Dubuque. Owner builds, $200,000, natural gas pipe line to serve area in vicinity of Clinton, IOWA.

Gas Service Co., Scarritt Bldg., Kansas City, Mo., Owner Builds. $60,000 gas pipe line to supply the Ford Motor Co., Clay Co., MISSOURI.

Triple H. Constr. Co., Linton, Ind., Contract Awarded. $163,453, labor only, 556.3 mi. rural distr. lines, NEBRASKA. Niobrara Electric Membership Assn., Hay Springs, P. O. Burns, Davenport Bank Bldg., Davenport, Ia., engr. CD 4/5/49.

Grosshans-Petersen, Inc., Marysville, Kan. Contract Awarded. $375,000. grading on track relocation to lift tracks above flood level, near HOLMESVILLE, NEB. Union Pacific R. R. Co., W. C. Perkins, ch. engr., 1416 Dodge St., Omaha.

† Electrical Builders, Associated, Mayville, Contract Awarded. $90,746. 10,000 kva. Lakota and 10,000 kva. Valley City sub-stations, Missouri River Basin Proj., Transmission Div. Spec. 600C-50, NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bismarck. Bids Nov. 2, awarded Dec. 6. CD 10/10.

Flora Eng. Co., 1640 E. 3 St., Denver 3, Colo. Contract Awarded. $339,245, est. $300,000. Generating Unit 6 in Pensacola Dam. Contr. 42, Craig Co., OKLAHOMA. Grand River Dam Auth., Vinita. Bids Nov. 20, awarded Dec. 14. CD 10/31.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Force Account. $250,000. electric distr. lines, Fort Worth area, Tarrant Co., TEXAS. CD 6/19.

Texas Electric Service Co., Electric Bldg., Fort Worth, Tex. Force Account. $600,000. last portion KV line around city, FORT WORTH, TEX. CD 1/9.

Peele Co., Inc., Stewart and Flushing Aves., Brooklyn, N. Y. Contract Awarded. Est. $425,000. supplying installing 12 motor stairs, TORONTO, ONT. Toronto Transportation Comn., 35 Yonge St., Toronto, Awarded Dec. 19. CD 9/15.

Ramsay Contg. Co. Ltd., 170 Perth Ave., Toronto, Contract Awarded. $70,000. radio station, TORONTO, ONT. F. Hewitt, 412 Rosemary Rd., Toronto. C. A. Meadows & Assocs., 4 Grange Rd., Toronto, engrs.

(Proposal Advertisement see pp. 88 to 90)

OFFICIAL PROPOSALS

Bids: Feb. 14, 1951 (249)

Sewage Treatment Works

THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY BERKS COUNTY, PENNSYLVANIA

Sealed bids for the construction of a new Sewage Treatment Works in the City of Reading, Berks County, Pennsylvania, will be received by the Authority in the Borough Hall at West Reading, Berks County, Pennsylvania, until 2 P.M., (E.S.T.) on February 14, 1951, and then publicly opened and read aloud.

The work will be divided into five contracts designated as follows:

CONTRACT NO. 1—STRUCTURAL WORK
CONTRACT NO. 2—MECHANICAL WORK
CONTRACT NO. 3—ELECTRICAL WORK
CONTRACT NO. 4—HEATING & VENTILATING WORK
CONTRACT NO. 5—PLUMBING WORK

The work may be awarded to one contractor under Contracts No. 1 and 2 in combination.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the office of the Secretary, in the Borough Hall, West Reading, Pennsylvania, or at the office of Albright & Friel Inc., Consulting Engineers, 121 S. Broad Street, Philadelphia 7, Pennsylvania, and copies thereof may be obtained at either office upon a deposit of $50.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set will be returned to each actual bidder and other deposits will be refunded with a deduction of $25.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of The Joint Municipal Authority of Wyomissing Valley equal to five per cent of the amount of bid must be submitted with the proposal.

The proposal must be sealed and marked "SEALED PROPOSAL FOR CONSTRUCTION OF SEWAGE TREATMENT WORKS" addressed to "Mr. HOWARD F. RICKENBACH, SECRETARY OF THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY, BOROUGH HALL, WEST READING, PENNSYLVANIA", and the contract or contracts under which the proposal is being submitted must also be shown thereon.

The Joint Municipal Authority of Wyomissing Valley reserves the right to reject any or all bids or waive any informality, and to award each contract to cover the construction of the Sewage Treatment Plan, as may be deemed to be the best interests of the Authority to be to their best interests.

No bidder may withdraw his bid within forty-five (45) days after the actual date of the opening thereof.

HOWARD F. RICKENBACH, SECRETARY, THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY.

Bids: Jan. 30, 1951 (247)

General Construction

DELAWARE RIVER
JOINT TOLL BRIDGE COMMISSION
56 Broad Street Bank Building
Trenton 8, New Jersey

Sealed proposals will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on January 30, 1951, at which time and place all bids will be publicly opened and read aloud, for the following Contracts:

Contract No. 5. "Building Construction"
Contract No. 6, "Plumbing"
Contract No. 7, "Heating and Air Conditioning"
Contract No. 8, "Electrical Work and Toll Registering Equipment"

The following is a general description of the work involved for the above Contracts:

The Administration Building will be a four story limestone faced office building, approximately 131 feet by 50 feet. It will be of fireproof structural steel and concrete construction. Three floors will be air conditioned. Construction includes also a one story garage building, and miscellaneous auxiliary items.

The Toll Collection Facilities will include booths, canopy, registering equipment, tunnel and adjacent toll plaza paving for eight lanes of traffic.

OFFICIAL PROPOSALS

After January 2, 1951, Instructions to Bidders, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, at the above address, or at the office of the J. E. Greiner Company, 1201 St. Paul Street, Baltimore 2, Maryland. Copies of these documents for the various contracts named above may be obtained upon the deposit for each set, which amounts will be refunded upon the return of documents in usable condition within thirty (30) days after receipt of bids:

Contract No. 5, $5.00 Deposit
Contract No. 6, $5.00 Deposit
Contract No. 7, $5.00 Deposit
Contract No. 8, $5.00 Deposit

A certified check, in the amount stated hereafter, shall accompany each bid for each Contract:

Contract No. 5, $25,000.00
Contract No. 6, $1,000.00
Contract No. 7, $3,000.00
Contract No. 8, $6,000.00

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one hundred percent (100%) of the total amount of the Contract.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids; to award each contract as a separate contract or in any combination of contracts; and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION
by: Alexander R. Miller
Chairman of Commission

January 2, 1951

Bids: Jan. 17, 1951 (246)

Grounds Development

BOARD OF EDUCATION, UNION FREE SCHOOL DISTRICT NO. 4, TOWN OF HUNTINGTON, COUNTY OF SUFFOLK, STATE OF NEW YORK

Separate sealed bids for the following types of work in this SCHOOL DISTRICT will be received by the Board of Education at its office in the Northport High School, Laurel Avenue, Northport, New York, until EIGHT FIFTEEN P.M. (8:15 P. M.) on the 17th day of January, 1951, and then at said office publicly opened and read aloud:

CONTRACT NO. 1—Grounds Development —Ocean Avenue School
CONTRACT NO. 2—Grounds Development —Larkfield School
CONTRACT NO. 3—Grounds Development —Laurel Avenue High School

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, Form of Performance Bond, may be examined at the office of James Van Alst, Architect, Centerport, L. I., New York, and copies thereof obtained.

The Board of Education reserves the right to waive any informalities in, or to reject, any or all bids.

Each bidder must deposit with his bid security in amount not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information for Bidders.

Attention is particularly called to the requirements as to conditions of employment to be observed, and the minimum wage that is to be paid.

No bidder may withdraw his bid within 45 days after the formal opening thereof.

Simultaneously with his delivery of the executed contract, the successful bidder must deliver to the Board of Education an executed Performance Bond with Labor and Materialmen's clauses in form meeting the Board's approval, in amounts not less than one hundred per centum (100%) of the accepted bid as security for the faithful performance of his contract and for the payment of all persons performing labor or furnishing materials in connection therewith, and having as surety on the Bonds such surety companies as are acceptable to the Board.

Hilda L. Baumann, Clerk
Board of Education

December 21, 1950

OFFICIAL PROPOSALS

Bids: Jan. 30, 1951 (250)

Intercepting Sewers

CITY OF WILMINGTON, DELAWARE

Sealed proposals for furnishing materials and labor to construct Intercepting Sewers A, B and E, Contract No. 1 of the City of Wilmington's Sewage Treatment Program, will be received from qualified bidders by the Board of Directors of the Street and Sewer Department, Room 251, City Hall, until 2:00 P.M., Eastern Standard Time, Tuesday, January 30, 1951 at which time and place they will be publicly opened and read aloud.

Each proposal shall be submitted in a sealed special envelope furnished by the City, which shall be filled out correctly to clearly indicate its contents. If the proposal is forwarded by mail, it shall be enclosed in an additional envelope addressed to the Board of Directors of the Street and Sewer Department, City of Wilmington, Delaware. If submitted other than by mail, it shall be delivered to Room 260, City Hall.

The work embraces the construction of approximately 17,500 feet of 30" to 60" pipe sewers, approximately 2,000 feet of 27" and smaller pipe sewers, and other appurtenant and miscellaneous work.

Each bid shall be accompanied by a certified check in the amount of two (2) percent of the proposal, made payable to the Board of Dirgctors, Street and Sewer Department, City of Wilmington, Delaware.

Drawings and specifications may be obtained from the office of the Board of Directors of the Street and Sewer Department of the City of Wilmington, Room 260, City Hall, or from the Office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be refunded upon return of the plans and specifications in good condition.

The Board of Directors of the Street and Sewer Department reserves the right to reject any or all bids and to accept the bid, which in its opinion best serves the interests of the City.

By order of
Board of Directors of the Street and Sewer Department
Chester R. Jones—President.
Attested: James J. Livingstone, Secretary

U. S. Government

MISSOURI RIVER BASIN PROJECT, Design Section, Casper, Wyoming, December 11, 1950. UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN THAT sealed bids on Specifications No. 703C-164 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, January 4, 1951, and then publicly opened, for furnishing labor and materials and performing all work for erecting prefabricated garage and machine shop at Reclamation Center near Casper, Wyoming, Kortes Unit, Wyoming, Missouri River Basin Project. The work is situated approximately 3½ miles west of Casper, Wyoming.

Copies of the standard forms, of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.25 per copy not returnable.

(236)

(Continued on the following page)

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSAL

(Continued from the preceding page)

Bids: January 10, 1951 (235)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and the Canal Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, January 10, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N. Y.				
Saratoga	M-51-1	Waterford Dry Dock (Dredge No. 4)		Removing Existing Diesel Engine & Placing with Generators & Electric Motor	$275 Plans $2	$5,000
Warren	FARC51-1	Sandy Hill-Glens Falls, S. H. 656 Project No. U391(7)	0.59	9" Cem. Conc. Pavt. 44' Wide = 0.44 mi. Misc. Work = 0.15 mi. 43.32' Corrug. Plate Arch	$13,000 Plans $10	$235,000
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick Street, Binghamton, N. Y.				
Delaware	B. W. S. 2, 2D, 2E, 2ET	New York City Board of Water Supply Pepacton Reservoir Roads 2, 2D, 2E & 2ET (Replacing Parts of S. H. 8320, 8325)	8.75	Bit. Mac. Pen. Method, Type 1 = 7.88 mi.; Graded Gravel Top Course: 0.47 mi. R. O. B. Gravel Fdtn. Course = 0.40 mi.	$110,000 Plans $25	$2,016,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Nassau and Queens	R. C. 51-2	Jericho Turnpike, Pts. 1 & 2, SH 1831 & SH 1940 Massape ua-Glen Cove, SH 9017 North Hempstead Turnpike, SH 9018 Hempstead-Farmingdale, Pt. 3, SH 9055	3.36	White Traffic Line Marker	$350 Plans $10	$6,500
Queens	FA GCP51-1	Grand Central Parkway Extension (Horace Harding Blvd. to Subway Yard Lead Bridge) Proj. U741(19)&U658(19)	2.08 (Pkwy) 2.49 (Access)	8" Cem. Conc. Pavt. 2 at 36' wide & var. = 1.86 Mi. Improve Masonry on H. H. Blvd Br. Pedestrian Overpass Sp. Steel Beam 159' Total 66'-0-1½" Sp. Conc. Arch (Cem. Conc. Pavt. on Access = 2.31 Mi.) (Sheet Asp. Pavt. on Access = 0.18 Mi.)	$150,000 Plans $100	$2,618,000
Suffolk & Nassau	N. S. P. 51-1 S.S.P.51-1	Northern State Parkway Southern State Parkway	8.71	Chain Link Fence and Miscellaneous Work	$5,000 Plans $15	$92,000
Suffolk	Cap.S.P.51-1	Captree State Parkway (Southern St. Pkwy. to Montauk Hy.) Cont. No. 2	2.53 (Pkwy) 2.86 (Access)	8" Cem. Conc. Pavt. 2 at 24' Wide (Access RDS. 8" Conc. 1.81 mi.; Asp. Conc. 0.95 mi.; Earth Treated 0.10 mi.) Hy. Sep. 89'-10⅞" Rig. Frame Hy. Sep 2 Sp. Rig. Frame 68'-9⅜" Each Hy. Sep. 72'-2⅝" Rig. Frame RR. Sep. 3 Sp. Rig. Frame 199'-1⅝" Total	$100,000 Plans $50	$1,827,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft of certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, and the Canal Law as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: Jan. 23, 1951 (248)

Sewage Collection System

The City of Port Arthur will receive bids, January 23, 1951, at 10:00 A.M., on: Sewage Collection System of 11,500 feet of 30" and 24" pipe. The pipe will be furnished by owner. Plans and Specifications are available at F. Shutts' Sons, 1322 - 13th Street, Port Arthur, Texas, for deposit of $10.00.

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.

CLOSING DATE: 10:00 p.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

Air Compressor & Pump Corp. 96
Albert Pipe Supply Co., Inc. 98
Albro Steel Co. 98
American Air Compressor Corp. 94
Atkinson Co., Guy F. 97

Bass Engineering & Construction Co. 94
Bauer, L. W. 92
Bendix Machinery Co., Inc. 96
Berger & Sons, Inc., C. L. 99
Bixby, R. W. 91
Boyer, R. H. 95
Brunson Instrument Co., Inc. 99
Buff 99

Clemens Construction Co. 99
Companella & Cardi 99
Concrete Company of Carthage 92
Contractors Sales Co., Inc. 96
Construction Survey Corp. 92
Contractors Machinery Co. 94
Corbett-Tinghir Co. 91

Darien Corp. 98
Davidson Pipe Co., Inc. 98
Detroit, City of 91
Drachman Steel Corp., Hy. 96

Ellis Co. 94
Equipment Corp. of America 95

Fehrs Tractor & Equipment Co. 96
Ferguson Co., Inc., The H. K. 91
Forsythe Equipment Co., Inc. 99
Foster Co., L. B. 94, 98
Frank, M. K. 94
Furnival Machinery Co. 97

Greenpoint Iron Pipe Co., Inc. 98
Greenburg Machine Co. 94
Gurley, W. & L. E. 99
Guion, H. P. 98

Harlan Construction Co. 97
Hess, Charles E. 91
Hickerson, Roy D. 99
Hodge & Hammond Inc. 95, 97, 99

Intercounty Construction Corp. 92

Jafra Inc. 98

Lester, J. 98
Lewis, Harry C. 95

McKees & Co., Arthur G. 91
Mississippi Valley Equipment Co. 96, 98
Morrison Railway Supply Co. 94

National Blue Print Co. 99
Nesbitt Equipment Co. 98

O'Connor & Co., Inc., Thomas 92
O'Neill, A. J. 95

Palmer & Baker, Inc. 91

Ranney Construction Co. 92

Schoonmaker Co., Inc., A. G. 94
Shannon & Co., J. Jacob 99
Sherman Transfer Co., Roger 96
Smith Co., H. Y. 96
Smith Inc., L. B. 93, 99
Standard Steel Corp. 98
Stanhope, Inc., R. C. 94
Stone Equipment Co., The 98
Stone & Webster Engineering Corp. 96
Subterane Corp. 96
Sweeney Brothers 92

Tagco Inc. 98
Thomasville Stone & Lime Co. 96
Tamblyn System 92
Tractor & Equipment Co. 94

Van Houten Machinery Co. 97
Vulcan Iron Works 95

Walsh Co., Richard P. 95
Warren-Knight Co. 99
Weiss Co., B. M. 95
Wellworth Trading Co. 96
Western Equipment & Supply Co. 98
Wilson Engineering Corp. 92

ENGINEERING

We anticipate increasing our engineering organization during the next several months for the design of Oil Refinery, Blast Furnace, Open Hearth, Steel Mill and Power Plants.

These men should be qualified as draftsmen, designers, checkers or higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, platework, heavy mechanical equipment and electrical.

If you are interested and have engineering design experience on this class of work, write to us for a personnel form for prompt consideration of your qualifications.

This work is in our Cleveland office, and is on a 5-day, 45-hour week basis, with time and one-half over 40 hrs; also, vacation and holiday pay. Steady employment and a good opportunity with a good organization.

ARTHUR G. McKEE & CO.
2300 Chester Ave.
CLEVELAND 1, OHIO

WANTED

TECHNICAL PERSONNEL

1—ASSISTANT CHIEF ENGINEER — Graduate engineer with broad technical and administrative experience in heavy civil and structural engineering and associated mechanical and electrical engineering and architecture.

1—SENIOR STRUCTURAL ENGINEER with at least ten years experience in design of heavy structures.

3—INTERMEDIATE STRUCTURAL ENGINEERS with at least four years active experience in designing heavy structures, bridges, highways, airports etc.

5—JUNIOR CIVIL ENGINEERS — an excellent opportunity for outstanding recent graduates.

1—INTERMEDIATE HULL DESIGNER and naval architect of at least five years experience in this field.

1—SENIOR MECHANICAL ENGINEER with at least ten years experience in design and layout of mechanical installations.

1—SENIOR ARCHITECT experienced in design as it relates to heavy engineering structures.

25—CIVIL, STRUCTURAL, ARCHITECTURAL, MECHANICAL AND HULL DRAFTSMEN.

12—FIELD INSPECTORS with at least five years experience in inspection of highways and heavy structures.

Liberal Salaries Commensurate with Ability. Vacations with Pay and Other Supplementary Benefits.

PALMER AND BAKER, INC.
Consulting Engineers
P. O. BOX 346, MOBILE, ALABAMA
PHONE 2-0511

CONSTRUCTION SUPERINTENDENT

Key men finishing job, available about Feb. subject to location. Take full charge one or more projects. 15 yrs. diversified heavy industrial & municipal work, familiar all trades, management, supervision, engineering, procurement, estimating, subcontracts, accounting, etc. Domestic or Foreign.

RW-8391, Engineering News-Record
330 W 42nd St., New York 18, N. Y.

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical — Power, lighting layouts and electrical controls.

Mechanical — Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.

Structural — Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders
The Ferguson Building, 1783 East 11th Street — Cleveland 14, Ohio

DESIGNERS, DRAFTSMEN - ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-8539, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $38,000,000 project. Starting salary $4,382, $5,204, $5,736, $6,586 per year with annual increases. Submit resume of experience with application request.

DETROIT CIVIL SERVICE COMMISSION
1501 Water Board Building
735 Randolph Street, Detroit 26, Michigan

DRAFTSMEN
STRUCTURAL STEEL
DETAILERS AND CHECKERS
WITH EXPERIENCE
CHAS. E. HESS
Triangle Bldg. — Pittsburgh 22, Pa.

DESIGNERS
Experienced in hydro electric power plants.
CORBETT-TINGHIR CO.
39 Broadway — N. Y. 6, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

POSITIONS VACANT—Office Engineer to coordinate field and office records for force account negotiations. P-8431, Engineering News-Record.

ENGINEERS WANTED for industrial fire prevention field work by national insurance organization with offices in most major cities. These are permanent jobs with a real future, but candidates should appreciate that extensive away-from-home travel is involved. Age 26-40 preferred. P-8306, Engineering News-Record.

POSITION VACANT—Asphalt Superintendent for New Jersey Turnpike. Must be familiar with latest equipment and methods. P-8432, Engineering News-Record.

WANTED BY large company—technical graduate, preferably one who has had field construction experience with successful contracting organization in concrete work, pile driving, pier construction and general heavy construction. Give age, education, detailed experience record and references in first letter. This is a good opportunity for right man, and will pay salary commensurate with ability. Apply P-8511, Engineering News-Record.

REQUIRED FOR Southwest two experienced draftsmen for design and detailing wood and steel structures, foundations, reinforced concrete and other allied work. Pleasant working conditions. Pension and insurance benefits. Personal traveling expenses refunded. Apply by letter with full details, age, education, experience, etc., to American Smelting and Refining Company, 1112 Mills Building, El Paso, Texas.

STRUCTURAL DESIGNER, with at least ten (10) years experience in steel and reinforced concrete. State education, extent of experience in each of the above types of work and salary expected. Frank Grad & Sons, Newark, New Jersey.

WANTED—GENERAL Superintendent familiar with all phases of dam construction, consisting of concrete, excavation and water diversion for work in Middle West. P-8535, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS VACANT

CONSTRUCTION SUPERINTENDENTS wanted for large general contractors, specializing in industrial construction. Our projects all over the country. Desire men qualified, through past experience, to handle industrial work. Must be engineers who have actually handled work in the above capacity. Give complete experience record in reply. P-8541, Engineering News-Record.

DESIGN ENGINEER—For design of sewers and sewage treatment plants. Graduate engineer with at least 5 years experience in design work required. With established engineering firm in Corvallis, Oregon. Please give summary of experience and references. Cornell, Howland, Hayes and Merryfield, 1600 Western Avenue, Corvallis, Oregon.

WANTED—CIVIL Engineering and/or Architectural Draftsmen. State experience and salary desired. Furnish sample of work. Applications will be treated confidentially. Clarke, Gardner & Associates, Consulting Engineers, 109 Calvert Street (P. O. Box 74), Salisbury, Maryland.

POSITIONS WANTED

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years' experience with erection, repair and maintenance of heavy industrial, power house, pumping stations and marine equipment. Desires permanent position. PW-8407, Engineering News-Record.

CRUSHING PLANT or Sand and Gravel Plant Supt., also heavy grading, specializing in rock removal. 28 years experience. PW-8422, Engineering News-Record.

CIVIL ENGINEER, licensed, 32 years experience industrial, commercial buildings, housing. Design, estimating, contract negotiations, field supervision, maintenance. Some foreign experience, speaks Spanish. Desires responsible position, preferably in East. Willing travel. PW-8441, Engineering News-Record.

(Continued on the following page)

POSITIONS WANTED
(Continued from the preceding page)

JOB ENGINEER—with present employer since 1941—power plant and heavy industrial work—available upon one month's notice. PW-8475, Engineering News-Record.

HARD HITTING General Construction Superintendent not afraid of hard work or long hours. Good organizer. Specializing large housing projects, such as: Duplexes, houses of 3 story apts. Age 43. PW-8383, Engineering News-Record.

EXPERIENCED ESTIMATOR, civil engineer, desires position with general contractor Central Ohio area preferred. PW-8569, Engineering News-Record.

WELDING SUPERVISOR—18 yrs exp. pipe lines—ships—structural steel—bridges maintenance—age 37—location So. West or West U. S. PW-8574, Engineering News-Record.

ENGINEER, 38, Married, M.S. in Civil Engineering. Speaks several foreign languages fluently. 13 years experience in design and construction of large industrial installations. Now employed by large engineering and contracting company. Desires position of responsibility with progressive firm. PW-8573, Engineering News-Record.

ENGINEER EXECUTIVE, B.S.C.E., age 38, good health, 16 yrs. in industrial and heavy construction, general supt. and manager on large projects with highest calibre administrative experience covering wide field. Know estimates and bidding, and have a personality particularly suited for negotiating contracts. Know costs. Minimum salary $10,000.00 per year. PW-8571, Engineering News-Record.

ARCHITECT, INDUSTRIAL experience, desires work on lump contract basis. Free to travel. PW-8575, Engineering News-Record.

PROJECT MANAGER, Resident Engineer, Contractors-Engineers Representative. Age 41 with 20 years experience on heavy construction projects including airports, dams, highways, railroads, bridges, commercial, multiple residential and industrial structures, and defense projects. Domestic and foreign. Top estimator with broad experience in quantity surveys, budget preparation cost and progress control, purchasing and field supervision. PW-8589, Engineering News-Record.

PROJECT MANAGER or General Superintendent now available. C.E. degree, registered. Experienced in managing and supervising all construction phases of public works, multiple story buildings, and large defense projects. Experience mostly in southwest, prefer this location. PW-8595, Engineering News-Record.

PART TIME WORK WANTED

FREE-LANCE ESTIMATOR — highly skilled, all types construction, all trades. C.E. graduate. Quantity take-offs and pricing. Will call for plans. N. Y. vicinity. LAurelton, 5-3393, PTWW-8302, Engineering News-Record.

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

AVAILABLE AFTER 1ST OF YEAR

Building Construction Executive

Thoroughly familiar all phases building industry, i.e., estimating, buying sub-contracts, materials, etc., solicitation of new business and field management.

PW 8493, Engineering News-Record
520 No. Michigan Ave., Chicago, Ill.

ARE YOU THIS MAN?

Here's an opportunity for a man of ability and vision to buy a small, growing, fully-equipped construction business which enjoys a fine reputation with nationally-known clients and local consulting engineers. Ideal for superintendent of large construction company who wants to direct his own business. Can net $25,000 a year and still find leisure time for hunting and fishing, for which this beautiful section of the East is noted.

BO-8430, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $10.00 per month until $48.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

11-15 So. Pearl St., B-491
Denver, Colo.

ESTIMATING SERVICE

Any Trade and Type of Project
Literature and Sample on request
Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

For lease or contract
BATCH PLANT & TRANSIT MIXERS
3 Aggregates, bulk cement, Trident water equipt. Rail hopper or clamshell agg. feed. Will load on cars or set up and operate on suitable job. Save this ad for future reference.
Contact V. M. Cagle
Concrete Co. of Carthage
Carthage, Mo.—Phone 5056—Nights 3089

WANTED
Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.
Box 1206
1474 Broadway New York 18, N. Y.

WANTED
TO BUY OR RENT
1 Heavy Steel Guy Derrick
50 Ton capacity at 45 degree angle
100 Foot Boom
Mast 110 or 112 Feet
Complete with Bull Wheel, Guys, Turnbuckles, Clips, Boom and Hoisting Blocks
THOMAS O'CONNOR & COMPANY INC.
Monatiquot St., North Weymouth 91, Mass.
Telephone WEymouth 9-4400

WANTED
USED BARBER GREENE
PAVER
SWEENEY BROS.
40 Poplar Street Scranton, Penna.
Pa. Tel. 5245

WANTED
2- 10- or 15-ton
BUILDING GUY DERRICKS
FOR STEEL ERECTION
mast 95 ft; boom 85 ft.
RANNEY CONSTRUCTION CO.
4395 Poplar Level Road, Louisville, Ky.

WANTED
1 or 2 FLOATING DRYDOCKS
1 or 2 FLAT DECK BARGES
For rental or purchase
W-8568, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
AIR COMPRESSORS
VACUUM PUMPS & STEAM BOOSTERS
L. W. BAUER
22 Barnett St. Bloomfield, N. J.

FOREMEN

Sewer Installations for Maryland and D. C. Area. Experienced Men only. State experience and age.
INTERCOUNTY CONSTRUCTION CORP.
4720 Baltimore Ave., Hyattsville, Md., P.O. Box 329

(Additional Wanted ad on page 96)

L.B.SMITH INC. OFFERS

AIR COMPRESSORS

Gardner-Denver 500 cubic foot two-stage water-cooled, D13000 Caterpillar diesel on four pneumatics. Used two months.

Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.

Gardner-Denver air-cooled 105 cubic foot with air receiver, V-belt drive from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.

LeRoi 2-stage 105 cubic foot air-cooled, skid mounted, built-in tool boxes, hose reels and hose.

Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.

Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.

Worthington two-stage, water-cooled, vertical 250#, 80 CFM, new condition.

QUARRY EQUIPMENT & BINS

Cedarapids BBB scalping unit with 1036 jaw.

10x7 Allis-Chalmers Blake type jaw crusher.

#1 Cedarapids Kubit impact breaker.

10x20 Beaumont crusher, reconditioned.

1036 Cedarapids jaw crusher, new condition.

Cedarapids 42"x10' and 4'x12' screens.

3'x8' Seco double deck screen.

2—4'x12' Tyler F600 double deck screens.

3'x10' revolving screen.

16" x 90' bucket elevator.

60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.

Conveyors—18"—24"—30"—36".

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.

2½-ton GMC, New and rebuilt.

Sterling COE Model 255GCS tandem drive tractor 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50x20 tires, airbrakes, outriggers, excellent condition.

2,000 gallon tanks on semi-trailer mounting.

New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.

Buda, Hercules, Hill diesels, rebuilt.

New and rebuilt Murphy diesels.

GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain 75B, 1¼ yd. shovel, diesel power.

Lorain 55B gas powered crane.

P&H Model 625A 15-ton crawler crane.

Brownhoist 1-yd. gas shovel and crane.

Lorain 30 combination ½ yd. shovel, hoe & clam.

P&H Model 150 ½ yd. truck crane on 6x4 Mack.

SHOVEL & CRANE ATTACHMENTS

Lorain 75B-77 1½-yd shovel attachment rebuilt.

P&H 203 shovel attachment.

Chain crowd Lorain 30A shovel attachment.

Lorain 40 Hi-Lift shovel attachment.

Bucyrus-Erie 30B tunnel front attachment.

Koehring 301 dragline fairlead.

50' crane-clam boom, 1¼ or 1½-yd.

Lorain 75 fairlead.

Backhoe Buckets & Attachments

¾-yd Lorain, 40, LBS #6105. 44" cutting width, teeth, sheave.

28" outside width solid bottom type LBS #4377, good condition.

¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.

McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #7433, rebuilt.

New Lima 1-yd, Amsco, LBS #2295.

Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.

Lorain 75 manganese 1¼-yd, LBS #7233. teeth and bail.

Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.

Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.

Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.

Heltzel 10'-12' finisher, rebuilt.

Blaw-Knox gas-electric 10½'-12½', rebuilt.

2 Koehring 10'-12', rebuilt.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.

1380'—Heltzel 7"x8" forms, with stakes.

1220'—Heltzel 9"x8" forms with stakes.

1430'—Heltzel 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.

R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.

Carr formgrader, new 1944, rebuilt.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.

Sanderson-Cyclone #44 well drill, new.

K5 International well drill with drilling tools, excellent condition.

Bits—Stems—Bailers—Sockets—Etc.

DITCHERS

Barber-Greene 44C Trenching Machine 18" to 24" cutting width, 7' depth.

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.

Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

TRACTORS

FD Cletrac crawler tractor, Buckeye bulldozer & double drum power control unit, DHXB Hercules diesel engine. Rebuilt, immediate delivery.

***Phone* HARRISBURG, PA. 7-3431**

LASTING • BONAFIDE • SERVICE — L.B. SMITH, Inc.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

DIESEL POWER

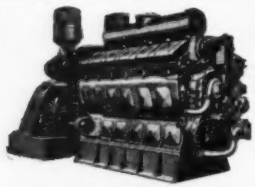
FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	12SG-6	450	450
1420	Fairbanks Morse	38D8¼	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1660	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12 9x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.

DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

CRANES

½ and ¾

Insleys—Lorains—Byers—Units—
Quickway — Osgood — P. & H. —
Hansen—Oliver.

(As is) or reconditioned.

⅜ to 2 Cu. Yd. —
Drag & Clamshell Buckets
Wrecking 1000 GI Trucks

THE ELLIS COMPANY

(Formerly Ellis-Novack Company)

2510 W. Empire St. Burbank, Calif.

Stanley—7-2305

PORTABLE COMPRESSORS

Sales—Rental
Rental Purchase

60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
105 CFM WORTHINGTON (Gas & Diesel)
105 CFM INGERSOLL (Gas) 2 & 4 Pneu
210 CFM GARDNER DENVER (Gas) 4 Pneu
210 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
315 CFM WORTHINGTON (Gas) 4 Pneu
500 CFM WORTHINGTON (Diesel) 4 Pneu

STATIONARY COMPRESSORS
FOR RENT
ELECTRIC - STEAM - GAS

TEST TRY AN "AMERICAN"

American Air Compressor Corp.

Dell Ave. & 48th St., North Bergen, N. J.

SINCE 1902

AIR COMPRESSORS

17 Diesel 315, 500, 630, 900 & 1500 Ft.
22 Elect. 676, 1080, 1302, 1730, 2200, 3178, 3865 Ft.
11 Low Pres. 745, 1080, 2200, 3000 & 6040 Ft.

CRANES — SHOVELS — DRAGLINES

7—Diesel & Steam Lorain 4 Cranes—20, 25, 30 & 40 T.
9—25, 40, & 60 Ton Steam & Elec. Whirley Cranes.
2—41B Bucyrus 1-½ Yd. 50' Boom Steam Crane.
40 Ton Orton Diesel Locomotive Crane.
54B Bucyrus, 80D Northwest Diesel Shovels-Drags.

TUNNEL EQUIPMENT

33—Conway, Erico & Gardner Denver Tnl. Shls.
26—Battery & Trolley Locomotives, 4, 6, 8 & 10 T.
268—Tunnel Cars, ½, ¾, 1, 2, 4, 6 & 8 Yd. Cap.

RAILROAD CARS

164—Dump Cars 1½, 2, 3, 5, 10, 20 & 30 Yd. Cap.
96—10,000 Gal. Tank Cars—100 Box Cars.
128—40 & 50 Ton Flat Cars—68—50 Ton Gondolas.

LOCOMOTIVES

17—Diesel 100, 80, 65, 45, 30 & 10 Ton.
42—Gasoline 35, 25, 20, 16, 10 & 8 Ton.

HOISTING ENGINES

STEAM: 14x12, 9x10, 8½x10 & 7x10.
ELECTRIC: 30, 40, 60, 80, 100, 125 & 150 H.P.

PILE HAMMERS & EXTRACTORS

9—McKiernan Terry No. 58, 5, 5, 6, 7, 9B3, 10B3, 8S, 11B3. Also Union No. 1.
Vulcan 800 & Vulcan #2 & 1 & 5000.

PUMPCRETE

Model 160, 190 & 200 REX Pumpcretes.

STEEL DERRICKS

2—Clyde 15 ton Stiff Leg 100 & 125' Boom.
2—Terry 25 ton 100' Boom Guy Steel Erectors.
2—7-10 Guy 87' & 50 Ton 100'.

STEEL STORAGE TANKS

14—5,000, 25,000 & 80,000 bbl. cap.
17—10,000 15,000 & 25,000 & 42,000 gal. cap.

R. C. STANHOPE, INC.

Tel: MUrrayhill 2-3075 60 E. 42 St., N. Y.

RAILS-TIES

TRACK ACCESSORIES

Largest stocks in U.S.
NEW & RELAYING RAILS
Track Tools and Accessories

Foster guarantees material satisfactory or returnable freight both ways, our expense.

✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS

L.B. FOSTER CO.

Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.

2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

DEPENDABLE USED MACHINES

Special.—Lorain 40 combination shovel and dragline, new in 1946

Bay City ¾ yd. dragline	Int. I-4 with front end loader	Kohler light plant
Browning truck crane	A-W 10x20 roller bearing jaw crusher	Erie 8" sand pump
Osgood 200 dragline	Pioneer duplex road gravel plant	Waukesha 6MZR engine
Koehring 301 dragline	Pioneer 5x8 and 4x10 screens	36" ga. switches
H-K Roustabout crane	Badger ditcher on full crawlers	L-B K-2 crane boom

For rent,—cranes, draglines, backhoes and all accessories.

10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

EVERYTHING FOR THE TRACK FROM

SWITCH TO BUMPER

75# ASCE—85# ASCE—
100# ARAA
NEW & RELAY TURNOUTS
in stock for
Prompt Shipments
with and without Switch Stands

MORRISON
RAILWAY SUPPLY CORP.

RAND BLDG. EMPIRE BLDG.
BUFFALO 3, N.Y. BIRMINGHAM 3, ALA.

NEW and REBUILT
STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

REX 200 DOUBLE PUMPCRETE
FOR SALE OR RENT

Rex 200 Double Pumpcrete together with over 800 feet of pipe, fittings and auxiliary equipment. Following completion of project recently, equipment has been completely rebuilt and is in top shape. Can be purchased on rental basis, or available for rent.

Boss Engineering & Construction Co.
Birmingham, Mich. Telephone: Detroit JO-4-6150

TRACTORS

Cat. D8 Ser. 8R rebuilt. #2S D.D.P.C.U. Cat. 8S bulldozer blade both new 1950.
Cat. D6 LeTour. D.D.P.C.U. bulldozer blade
Cat. D7 Tractor, angledozer D.D.P.C.U. Rebuilt.
Cat. D4 with T4 Traxcavator.
Cat. D4 with IT4 Traxcavator and blade.
A-C HD-19 Garwood cable bulldozer D.D.P.C.U.
Int. TD-18 B-E hyd. bulldozer.
Int. TD-24 with B-E cable blade and P-29 PCU.
Int. TD-9 with B-E hy bulldozer
Int. TD-24 with B-E ca blade.

PAVERS—CONCRETE MIXERS

2 Yd 56-S Smith Mod T. Tilting Mixer.
2 Yd C.M.C. 56-S Building Mixer.
2 Yd Ransome 56-S Builders Mixer, Elec.
28-S Ransome Builders Mixers, Elec.
Jaeger 11-S end disch. concrete mixer.
Rex 11-S end disch. concrete mixers on pneumatics.
Rex 10-S side discharge concrete mixers on pneu.
Ransome 10-S concrete mixers on pneumatics.
Koehring Model 34-E Tv Batch Paver.
Ransome 34-E Dual Drum Paver. Diesel Power.

CONCRETE PLANTS AND STORAGE BINS

Butler 450 Bbl. Cement Bin with weigh batcher and elevator.
Butler Ag. Bin 3 compt., 100 Tons with weigh batcher.
Port. Concrete Plant Complete Erie-Strayer. 1 yd.
Johnson 4 Compt. agg. 2 cement, 4 yd. batcher, 888 bbls. cement silo semi-auto controls, etc.
Butler cement bin 105 bbls. Complete.
Butler 300 Ton, 3 compt. bins, 1 for 400 bbls. cement. 2 compts. for aggregate.

ASPHALT PLANTS

Barber-Greene 830-840 Hot Mix.
Barber-Greene Model 848 "Travel Plant".
Barber Greene 842 Portable Utility Plant. Complete B-G continuous mix 848-836-833.

TRANSIT MIXERS

Rex 5½ yd Adjusta-Hite. New 1949.
Smith Mobile #5 Model 405, rebuilt-guar.
Rex 4 yd 1R on Mack 6 BX chassis.
Jaeger 4 yd on 1951 HB-12 chassis. Rebuilt.
Rex 3½ yd new 1947 on L.F. Mack.
3 Rex 3½ yd hor. Unmounted.
Jaeger 5½ yd on Mack Diesel chassis.
Rex 3½ yd on Brockway chassis.
Rex 4½ yd high dump on Mack Diesel chassis.
Jaeger 4½ yd high dump. New 1950. Mack chassis.

PUMPCRETES

REX 160-180-190-200 with fittings.

SHOVELS—CRANES—DRAGLINES

Marion 362 Shovel-Dragline 1½ yd. Diesel.
Koehring 1¼ yd Diesel Dragline-Shovel. Rebuilt.
Northwest 6, 1½ yd Diesel Crane. Rebuilt condition.
Lorain Model MC-414 Moto-Crane 20 Ton Cap.
Northwest 6, 1½ yd Shovel-Crane, Diesel powered.
Lorain 80, new 1948, 1¾ yd Diesel shovel.
Lima 1201, new 1947, Diesel shovel.
Lima 1201, Dragline, Diesel, 100 ft. boom.
Marion 111, high lift Diesel shovel, new 1948.
Link-Belt K 570 Shovel-Dragline, Diesel. Late type.
Northwest Model 25, ¾ yd Diesel shovel, new 1947.
Bay City 25, ⅝ yd Shovel-Backhoe.
Lorain MC 414 Truckcrane 20 tons cap.
Lima 34, Dragline, 1 yd, Cummins Diesel.
Byers 83 Shovel, backhoe, ⅜ yd new 1947.

TRENCHERS

Parsons Model 310. Barber-Greene Model 44C.
Parsons Model 31. Cleveland Model 110.

STIFF LEG AND GUY DERRICKS

Steel 35 ton stiff leg derrick 100 ft. bm.
American 20 ton stiff leg 90 ft. bm.
American 15 ton stiff leg 65' boom.
Stiff leg derrick 15 tons 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.

RICHARD P. WALSH CO.

30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—¾ yd. Mdl. K570 Link Belt Diesel Crawler Crane #2215, with 50-65-70 or 85' boom and 17'6" lib, high gantry, hydraulic controls, D17000 engine. Will handle 41½ ton. Weight 148,000#.
1—1¾ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.
1—1½ yd. Lorain Model 80, No. 10750, with 65' boom, powered by Waukesha Hesselman diesel engine.
1—1½ yd. P&H Model 655-A, dragline and crane, Ser. 6426, powered by Caterpillar Model D13000 Diesel engine, Crane boom 75'.
1—1½ yd. Link Belt Model K360, Ser. No. 1959, powered by Caterpillar D13000 Diesel engine with 65' boom. Also have back hoe attachment, boom 25' scoop arm 8'9", pull shovel mast 11'9" with 1½ yd. dipper.
2—1½ yd. Lorain, Mdl. 78, Ser. #11281, 10973, power Cat. D13000 diesel engines, 70 and 100' boom.
1—1¼ yd. Bucyrus-Erie, Mdl. 33C, Ser. #16502, gas powered with 50' boom.
1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1520. Powered with 4 cyl. Model WL-51-B Waukesha gasoline engine with 50' boom.
1—1 yd. Erie Gas-Air Model GA-3 combination shovel and crane, Ser. No. 10679, powered with 4 cyl. Waukesha Model WL55 gasoline engine, with 47' crane boom. Shovel boom 22', sticks 17' with 1 yd. dipper.
1—¾ yd. Koehring Model 301, Ser. No. 84. Powered by 4 cyl. Wisconsin Model M gasoline engine with 40' boom.
2—⅜ yd. P&H Mdl. 255A, Ser. No. 8243, 5750 with Chrysler & Waukesha engines, 40' boom.

WE OWN IS CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

Let E. C. A. supply you with oil burning Salamanders, and Concrete Heaters (torch or hot water type), Boilers, etc.

TRENCHERS

Buckeye Model 12 Serial #12, powered by 6 cyl. Buda gas engine. Model HP 326, wheel type. Will cut 24" wide, 5½' deep, all mounted on crawlers.

Parson Model 200 trencher, Serial #1774, powered by 6 cyl. Waukesha gas engine, Serial #6BZIU7486B, wheel type. Will cut 21" wide, 5½' deep, all mounted on crawlers.

BOTH LATE MODEL MACHINES REBUILT

AIR COMPRESSORS

Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

HEATING EQUIPMENT

BOILERS
43—Boilers, ranging in size from 6-100 HP, both portable, vertical and locomotive type, both high and low pressure, complete with all fittings, grates, base and hood. Makes—Casey Hedges, Johnston, Parsons, Industrial, International, American, Erie, Hamburg, Nagle, etc.

HOT WATER HEATERS

Oil Burning
10—Heaters #312 and #301 Hauck, also #16, #45 and #47N Aeroil.
Coke Burning
42—Coke burning hot water heaters, 20 are 24" dia. x 48" high, balance 26" dia. x 40" high with 1" coils.
Torch Type
20—Torch Type Aeroil concrete heaters, #24, #25 & #26, for mixers 6 to 28 cu. ft., complete with hose and fuel tanks.

PUMPCRETE

1—Rex Mdl. 190 single #CP144, gas powered, with remixing hopper. Cap. 25 to 30 cu. yds. per hr. Max. vert. lift 110'.

Partial List only—Send for Stock List—We Buy, Sell and Rent

CLIFTON HEIGHTS, PA.
MA disen 6-2200

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NE vada 8-2400

30-J Church St.
NEW YORK 7, N. Y.
Phone Worth 2-0036

P. O. Box 933-J
PITTSBURGH 30, PA.
Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

SALE OR RENT

1—6 Ton Huber 3W Diesel Roller.
1—10 Ton B-S Gas Tandem Roller.
2—D7 Bulldozers Rebuilt.
1—820 Lorain Diesel Shovel or Dragline.
1—#12 Cat. Grader.
1—45' Crane Boom for Link Belt LS90.
1—44 Ton GE Diesel Elec. Locomotive.
1—50 Ton Portor Side Tank Loco New 1942
1—30 Ton Browning Steam Loco. Crane, 1941.

B. M. WEISS CO.

Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

FOR SALE *CHEAP*

3—15 ton Whitcomb gas Loco. Std. gauge.
1—50-ton Porter Loco. 0-6-0 Std. gauge. 1942.
1—Schramm Diesel 315 cu. ft. 2 stage comp. 1947.
1—LeRoi 315 cu. ft. 2 stage comp. 1942.
1—6" 2—4" 1—2" Humdinger self priming pumps on steel wheels.

HARRY C. LEWIS

899 East Grand Street Elizabeth, N. J.

VULCAN

PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

FOR SALE
LOCOMOTIVES

1—Whitcomb 30 Ton Diesel—Std. Ga.—Late Model.
1—Plymouth 25 ton Gas, Std. Ga., new 1942, excellent condition.
1—G.E. 25 Ton Diesel-Elec. Std. ga., New 1949.
1—Plymouth 8 Ton Gas, Std. Ga., #4606.
1—Plymouth 15 Ton Diesel, 36" Ga.
1—12 Ton Porter Diesel, 36" Ga.
2—Whitcomb Gas 24" Ga.
Brookville—10 Ton Diesel—30" Ga.—Used 900 Hrs.

G. E. 44 ton Diesel Elec. Heavy Duty—Late Model.

COMPRESSORS

Worthington 15 x 9½ x 12, 630 CFM @ 100#, G.E. 125 HP 3/60/440.
Synchronous Motor & Accessories, Serial #L-41659
I. R. Model XRE—1700CFM—2200/3/60-250 HP Syn. Motor.

CRANES

Wiley 25 ton Steam Whirley.
Browning 30 T Steam Loco. Crane, #3085.

MISCELLANEOUS

5—Hopper Cars, 70 Ton, 4 Pocket.
Dewalt GE 7½ HP saw #51098. Almost New.
48—Western 20 yd.—Air Dump.
Union #6 Sheeting Hammer, #2128.

A.C. 600KW-2300/3/60 Generator direct connected Superior 800 HP Diesel. Rare Bargain.

1—Southwark Hyd. Draw Bench, 200x90, 9'0" Daylight.

R. H. BOYER

2005-13 W. Bellevue St., Phila. 40, Pa.
Phone Sagamore 2-7132

SHOVELS & CRANES

1—Northwest Model 6 Crane
2—Northwest Model 25—crawler crane, shovel, Pullshovel
1—Lorain 2 yd. diesel shovel

HODGE & HAMMOND, INC.

720 Garrison Ave. New York 59, N. Y.
Phone: Kilpatrick 2-2400

BINS: 1—Three compartment, 74 yd. capacity, 4 yd. batch meter and scales.
1—Three compartment, 120 yd. with 2 yd. batcher and scales.
1—Two compartment, 60 yd. capacity, 1¼ yd. batcher and scales.
1—400 bbl. bulk Cement Bin with boot bucket elevator, 9" x 13'6" screw feeder, with cement batcher, etc.
COMPRESSORS: Sullivan WN4, angle compound, 22 x 13 x 14 with 500 H.P. synchronous motor. Worthington 29 x 21 x 23 with 600 H.P. synchronous motor.
CRUSHERS, GYRATORY: Various makes, sizes 12" x 44" up to 42" x 124".
CRUSHERS, JAW: Various makes, 4" x 5" to 48" x 60".
CRUSHERS, REDUCTION: Symons 2 ft., 3 ft. and 4 ft. Telsmith 2 ft., 3 ft. and 4 ft. Gyrasphere, Traylor 3 ft. and 4 ft., type TY.
CRUSHERS SPECIAL: 1—Allis Chalmers Superior 30" and one 7½ K. Gyratory. 1—Farrel 24" x 36" Jaw.
DIESEL GENERATORS: 4—Caterpillar D13000 with 74 KW, V-belt, 220/440 volt, all complete.
DERRICKS: Terry 15 ton steel erector's Guy Derrick, 100 ft. mast, 90 ft. boom, with 60 H.P. motor, or 90 H.P. gasoline unit. 1—15 ton steel Stiff Leg Derrick, 75 ft. boom, with or without 90 H.P. gasoline hoist.
DRAG SCRAPER: Sauerman 60 H.P., 3 drum, 1200 ft. inhaul, 1900 ft. outhaul cable, with two 1½ yd. Crescent buckets.
BLAST HOLE DRILLS: 2—Bucyrus Erie 42T electric, 220/440 volt, 9" bits and tools. 2—29T with 9" bits and tools; one new one used.
SHOVELS: 1—Bucyrus Erie 120-B, 4 yd. electric; also, one Bucyrus Erie 170-B, 6½ yd. electric, 3 phase, 60 cycle, 2200 or 4000 volt.
DRAGLINES: 6—Crawler tread, diesel powered Cranes, late type, current models, P & H, Northwest, Lorain, Osgood, 2 yd. and 2½ yd. capacity, with 60 to 80 ft. booms, wide treads and long cats.
SHOVEL PARTS: Lima 2 yd. dipper, sticks and boom for model 802, NEW condition.
TRUCKS: 6—Euclid FD model, 15 ton, end dump, rock body, with 150 H.P. Cummins diesel motors. 6—Euclid model 20TD, 22 ton, end dump, rock bodies, 275 H.P. Cummins engine. 6—Mack 20 ton, end dump, rock bodies, 275 H.P.

A. J. O'NEILL Lansdowne, Pa.

Phila. Phones: Madison 3-8300—3-8301

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

FOR SALE

Air Compressors

(3) 315' Ingersol-Rand—Gas—Four Pneumatics
(1) 60' Ingersol-Rand — Gas — Two Pneumatics
(4) 56B Ingersol-Rand Jackhammers
(10,000) Ingersol-Rand Rock Bits—Class 1 —2⅜"

Miscellaneous

(5) #5A Sets Airoil Salamanders (1 tank, 2 salamanders set)
(4) #CFL2 Carbic Portable Acetylene Flood Lights
(1) Model 92 Brever Elect Blower and Vacuum Cleaner
(3) Saugen Setter Derricks with Hand Winches
(23) Pyrene Class A 2½ Gal. Fire Extinguishers
(3) Perfection Kerosene Heaters
(4) Jackson #88 Concrete Buggies Pneumatic tires
(4) Hot Shot Heaters (portable)
(2) Kelly Model 30 Floats Gas. Driven

AIR COMPRESSOR AND PUMP CORP.
500 Tiffany St., New York 59, N. Y.

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

FOR SALE

One Barber Greene Model 44C Ditcher, 18"x8'3" boom, powered by 62 HP 351 Buda gasoline engine, starter. Set up for 24" digging width. Serial #44-48-63. Engine #311475.

Purchased..... Sept. 24, 1948

Used very slightly on one job and is the same as a new machine. It did the following work:

3,000 feet 2' trench
13,000 feet 5' trench

Price, f.o.b. Syracuse, New York..$10,000

Contractors Sales Co., Inc.
Green Island, Troy, New York

USED EQUIPMENT FOR SALE

1—¾ Yd. Shovel, Model 3 Northwest Caterpillar. Year Model 1929—Serial #2966. Powered with Wisconsin Gas Engine. Condition: Good — Motor Overhauled 1949. Price: $4,000.00.

2—Shovel Fronts for ¾ Yd. Bucyrus-Erie Type B Steam Shovels. Booms, Sticks & Dippers. Condition: Excellent. Price: $500.00 each.

1—Speed Reducer, Model 9DA Falk. 100 H.P. Complete with Couplings. Ratio 11.5 to 1. Shaft Dia.—Input 2", Output 5". Condition: Excellent. Price: $1,000.00.

1—Electric Converter, Model FCE8 Reliance. 11½ H.P., 8 KVA, 440 V., 60 Cy., 3 Phase Continuous 1140 RPM 900. Condition: good. Price: $350.00.

1—Air Compressor, 220 ft. Ingersoll-Rand Single Stage. Mounted on International Truck Chassis. Condition: Compressor & Truck—Complete Unit—Good. Price: $1,000.00.

1—Roll Crusher, Martin 18" Style F. Condition: Good. Price: $400.00.

1—Sectional Belt Conveyor—Farquhar #346.-14" x 17' with Motor 1 HP - AC - 3 Phase - 60 Cy. - 440V. Hopper & Discharge Chute. Condition: Good. Price: $200.00.

2—Well Drills, Loomis Model 44 Clipper Full Crawler Blast Hole Gasoline Powered. Condition: Excellent. Price: $4,500.00 each.

1—Scale, Exact Weight Style #2225, 10 lb Tare Beam, Dial 25 lb Under 5 lb Over with Dustite Bagholder. Condition: Good. Price $200.

1—Chrysler Motor—Type C36-520 8 Cyl—3¼x 4⅞ Gasoline With Electric Starter. Including $150 Worth of Spare Parts. Condition: Good. Price $500.

Thomasville Stone and Lime Co.
THOMASVILLE, PA.

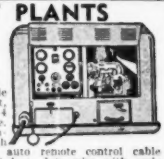
FOR SALE

65 ton Atlas diesel elec. loco. new 1942
50 ton Whitcomb diesel elec. loco. new 1942
25 ton G.E. diesel elec. loco. new 1949
Two Colby 50 ton gantry cranes
1700 ft. I-R elec. air compressor new 1944
20 Koppel 20 yard air dump cars
50 ton American steel stiffleg derrick
2 yd. Lorain 820 shovel-crane new 1948

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

LIGHT PLANTS

Brand New!
War Surplus
Signal Corps
Power Unit PE 197



115v 60 cy. A.C. single ph. 5 K.W. Hobart, water cooled, 14 h.p. 4 cyl. Hercules engine. Remote Control, complete panel board with instruments, 150 ft. auto remote control cable with reel; 150 ft. #6 bus, duty wire with reel; housed in metal case with replacement parts & tools. Cable with reels alone worth $400. Reg. price of unit $1900. Shipping wt. 1350 lbs. Our price, complete,

$895.00
f.o.b. Chicago

2½ K. W. LELAND POWER PLANT $295.00
WRITE FOR ILLUSTRATED FOLDER

WELLWORTH TRADING CO.
1831 S. State St. Dept. ENR Chicago 16, Ill.

Trench Excavators: Buckeye, Austin, Parsons (8).
Shovels, Cranes, Draglines, ⅜ to 6-yds.
Euclids, At.&S. Sterlings, end & bottom dumps.
Telsmith washing plant; Batch bins, cement silos.
Jaw Crushers, 48"x60", 40"x48", 30"x42".
Gyratory Crushers, 16", 20", 27", 30", 42".
Rotary dryers, kilns, coolers.
Colby 25-ton gantry crane; stm. loco. cranes.
Locomotives, 7 to 50 tons, diesel, gas, steam.
Walking Draglines, 6-yd., 3-yd., diesel, elec.
B-Erie shovel front att., 2¼ yd., 52B-55B.
H. Y. Smith Co., 826 N. B'way, Milw. 2, Wis.

FOR SALE

HOUSE BOAT BARGE 32 ft x 132 ft

1st. Deck Cabin 28 ft. x 122 ft.
2nd. Deck Cabin 28 square feet—was used for offices and workmen's change house, etc. New Boiler House, National Tube Company, McKeesport, Penna., now moored in Menongahela River.

STONE & WEBSTER ENGINEERING CORP.
P. O. Box 447. McKeesport, Penna.

One (1) Rex Dual Drum Paver.
One (1) Le Tourneau Model W Scraper.
Two (2) Gar Wood 6-yard 2-wheel Scrapers.
One (1) International TD-18 Tractor w. Control U.
Three (3) Allis-Chalmers HD 7 Tractors with Bulldozers.
Four (4) Allis-Chalmers HD 10 Tractors w. Dozers.
One (1) ¾ yd. Link Belt Dragline, Cat Diesel Eng.
Four (4) Super C Tournapulls, excellent condition.

FEHRS TRACTOR & EQUIPMENT CO.
1809-11 Cuming St. Omaha 2, Neb.

WANTED

(Additional Wanted ad on page 92)

FOR SALE OR RENT (also with option)

CAT. D-8 and D-7 bulldozers, late models
INT. TD-24 and TD-18 bulldozers, slightly used
CAT. D-4 hydr. LPC dozer, new tracks, rebuilt
LORAIN shovels mod. 80 & 820, built 1949
INSLEY ¾ cy Truck Crane, rebuilt; special $3950
LINK BELT LS50 Dragline & ½ cy Backhoe w/Buckets.

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13—Tel: Canal 6-5693

1—5 ton Hughes Keenan International Tractor Crane
1—2 Ton Garwood-Case Tractor Crane
2—Worthington 315 c.f. Compr.—pneumatic tired
1—Worthington VMV-40 Wagon Drill
8—Worthington Paving Breakers
3—Jack Hammer Drills—1000 bits
2—#3 McKiernan-Terry Sheeting Hammers
3" self priming Centrifugal and Diaphragm Pumps

SUBTERRANE CORPORATION
420 Lexington Avenue. New York 17, N. Y.

WANTED

STEAM CRAWLER CRANE

Approx. 1¼ yd.

WHAT HAVE YOU TO OFFER?

W-8520, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SEE **FURNIVAL** FIRST

For the finest in used equipment at the best possible price!

3 Allis Chalmers HD10W Tractors equipped with 13 cu. yds. Athey Truss Wheel Wagons.

3 Super "C" Tournapulls with Cummins Engines.

1 Caterpillar D-7 Tractor, equipped with LeTourneau Dozer.

1 Caterpillar D-7 Tractor, equipped with LaPlant Choate Angledozer.

1 Caterpillar D-4 Tractor equipped with LaPlant Choate Angledozer.

1 Caterpillar D-4 Tractor equipped with ¾ yd. Traxcavator.

1 LaPlant Choate C-108 11 yd. Carryall Scraper.

1 Wooldridge BB85 11 yds. Carryall Scraper.

2 Rex 34E Dual Drum Pavers.

1 Bucyrus-Erie 15B Crane.

1 Mixermobile 2 yd. Drum, 35' tower, 10' extension.

BARGAIN!!!
USED ⅜ YARD UNIVERSAL TRUCK CRANE ON MACK CHASSIS!
GOOD QUARRY RIG
WILL GO FAST! ACT AT ONCE!

FURNIVAL MACHINERY CO.
54th & Lancaster, Phila. 31, TR 7-5200

FOR SALE
#95 NORTHWEST DRAGLINE or CRANE

This machine is three years old. Serial No. in the 12000 series. In good clean condition. Equipped with swamp tracks, Murphy Diesel, 80 ft. boom and 1500 watt Kohler Light Plant.

FS-8483, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FOR SALE
BUCKETS
Distributors for Pettibone Mulliken Corp.
1—Lorain—40 Truck Crane, 10 Wheel
1—10 ton—O.E. Crane, 50 Ft. Span—A.C.
1—Haiss—Bucket-Loader, Model—75 C
VAN HOUTEN MACHINERY CO.
908 Van Houten Ave. Clifton, N. J.

Scoopmobiles & Buggymobiles
NEW & USED
For Sale or Rent
HODGE & HAMMOND, INC.
720 Garrison Ave. New York 59, N. Y.
Phone: Kilpatrick 2-2400

NOW AVAILABLE!

1—1700' I.R.-XRE Compressor w/syn. motor.....$14,500.00
1— 445' G.D.-WBH Compressor w/G.M. Diesel....$ 4,250.00
1— 315' G.D. Portable Compressor-Gas.....$ 1,000.00
1— 400 KW Enterprise Dual Fuel Gen. Unit.....$33,500.00
3— 100 KW Superior Diesel Generating Units.....$ 4,500.00 ea.
1—50 ton G.E. Diesel Electric Locomotive.....$35,000.00
2—12 ton Davenport type Diesel Electric Loco.....$ 9,000.00 ea.
1—D8 Caterpillar Tractor w/d.d p.c.u. & dozer.....$ 5,500.00
1—D8 Caterpillar Tractor w/d.d. p.c.u. & dozer.....$ 8,500.00
3—#12 Caterpillar Motor Patrols....$6,000.00 to $ 7,000.00 ea.
4—Super C Tournapulls.....$ 7,000.00 ea.
1—Mess Hall Complete—300 man.....Price on application
1—4000 gal. Dart Sprinkler Truck—Diesel.....$ 9,000.00
6—4 cu.yd. Gar-bro #4123A Concrete Buckets....$ 1,500.00 ea.
8—26.7 cu.yd. Southwest Bottom Dump Trailers w/200 HP Peterbilt Diesel Tractors.....$16,500.00 ea.

Above equipment is located at Republican City, Nebraska

Following equipment located on the West Coast:

1—5BV Euclid Loader—New 1948.....$16,000.00
2—4500 gal. Western Sprinkler Trucks—Diesel...$ 7,500.00 ea.
3—Mod. W LeTourneau Carryalls.....$ 7,500 ea.
1—Davenport Rooter (11,000#).....$ 1,000.00
1—34E Ransome Dual Drum Paver, Diesel.....$ 8,250.00
4—4 cu.yd. Dumpcrete Bodies.....$ 1,500.00 ea.
1—7 ton Whitcomb Gas Locomotive, 36" gauge...$ 450.00
2—D17000 Caterpillar Power Units.....$ 5,600.00 ea.
1—2 cu.yd. Owens Type DX Clamshell Bucket...$ 2,000.00
1—10B3 McKiernan Terry Pile Hammer.....$ 2,700.00
3—#12 Caterpillar Motor Patrols.....$ 6,750.00 ea.
1—13 cu.yd. Mod. 55FDT Euclid Bottom Dump...$15,500.00
20—20 cu.yd. Western End Dump Rock Trucks Diesel.....$ 5,000.00 ea.
4—26.7 cu.yd. Southwest Bottom Dump Trailers w/200 HP Peterbilt Diesel Tractors.....$16,500.00 ea.

All offerings are subject to prior sale

..... DEALER INQUIRIES INVITED .....

For complete list of equipment available for sale, contact either:

GUY F. ATKINSON COMPANY
10 West Orange Avenue, So. San Francisco, Calif.
PHONE—JUniper 4-8120—Ext. 44
OR
HARLAN CONSTRUCTION COMPANY
Republican City, Nebraska
PHONE—Republican City 101

FOR SALE

Used Cummer two ton

ASPHALT PLANT

complete with electric motors, dust elevator and low pressure oil burner

Located in New York Metropolitan area

In very good operating condition

Priced to move quickly

RETT COLE
244 Grove Street, Brooklyn, New York
Phone Glenmore 5-6682

FOR SALE

ONE FLOATING DRYDOCK
2500 TON.

ONE FLOATING DRYDOCK
500 TON.

H. P. GUION
Dredge Broker
303 W. 42nd St.
New York, N. Y.

FOR SALE

¾ Yd Bay City Model 450 60' boom 1948
¾ Yd Byers Model 83 Crane Dragline 1947
¾ Yd Buckeye Model 70 Crane Drag Hoe 1948
¾ Yd Browning Model K-2 Crane 1929
½ Yd Michigan Truck-Crane drag hoe 1948
¾ Yd Unit Model 514 as hoe or crane 1947, 1948
¾ Yd Byers Back-hoe used 2 weeks attachment.

THE STONE EQUIPMENT CO.
10038 W. Jefferson River Rouge 18, Mich

PUMPCRETE For Sale

160 Double—1200 Ft. Pipe—Large Stock Fittings & Spare Parts

NESBITT EQUIPMENT COMPANY
451 Calvert St. Alexandria, Virginia

For immediate shipment—36" WF beam at 300# x 49' 2" at $7.75 Cwt.
Approx. two tons 13 16" stainless steel rods 10' to 15' long at 45c. per pound.

JAFRA INCORPORATED
P. O. Drawer "E"
Little River Station, Miami 38, Florida
Telephone 7-4571

One (1) JAEGER 2 Bag Concrete Mixer

A1 Shape $450.00

J. LESTER
Liberty, N. Y. Phone Liberty 1842

1—Manitowoc Model 2000B 1-¼ yd. shovel
1—Manitowoc Model 3500 2-½ yd. shovel
1—Manitowoc Model 3500 2-½ yd. dragline
1—American ¾ yd. dragline completely overhauled
1—Insley K-14 combination trench hoe and dragline crane
1—Insley K-12 Trench Hoe Overhauled

WESTERN EQUIPMENT & SUPPLY CO.
2221 11 St. Rock Island, Ill.

PILING

Need STEEL SHEET PILING?

RENT IT! . . . "FASTER from FOSTER"

LARGEST STOCKS IN U. S.
All Lengths • All Sections
Also Corrugated Steel Sheet Piling

Foster's rental rates give you a low fixed expense for competitive bidding purposes.

Pile Hammers & Extractors For Rental
Rails•Track Accessories•Wire Rope•Pipe

L.B. FOSTER CO.
PITTSBURGH 30, PA. CHICAGO 4, ILL.
HOUSTON 2, TEX. NEW YORK 7, N.Y.

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used	Rented & Sold
143 pcs. 60&50 ft. Inland 122-Chicago	
84 pcs. 35 ft. Carn. M116-Missouri	
305 pcs. 35-45 ft. Beth. SP4-Alabama	
208 pcs. 30-25 ft. Carn. M112-Minnesota	
67 pcs. 20 ft. Beth. AP3-Buffalo, N. Y.	

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

STEEL SHEET PILING

400 pcs Beth DP2—40 ft.
478 Tons SP4—20 to 62 ft.
500 Tons DP2—AP3-40 ft. and 30 ft.
41B & MARION 32 STEAM CRANES

DARIEN, 60 E. 42nd St., N. Y., N. Y.

For Sale or Rent

STEEL SHEET PILING

Carn. MP-101 section-used redrivable

236 pcs. 62-50 ft.	44 pcs. 30-20 ft.
365 pcs. 40-30 ft.	250 pcs. 20- 8 ft.
188 pcs. 40-30 ft.	also "Y" pieces

IMMEDIATE SHIPMENT from Kentucky

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis, Mo.

FOR SALE

STEEL SHEET PILING

Mill Delivery

ROLLED TO YOUR SPECIFICATIONS

Inquire

ALBRO STEEL COMPANY
47-29 Van Dam Street
Long Island City 1, New York
Stillwell 4-2720

PIPE

EST. 1904

DAVIDSON PIPE COMPANY INC.

FORMERLY
ALBERT & DAVIDSON PIPE CORP.
ONE OF THE LARGEST STOCKS IN THE EAST

Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

PIPE AND ACCESSORIES

IF IT'S MADE, WE HAVE IT!

Seamless and Welded—Every Size and Wall Thickness—Cast and Wrought Iron, Steel, Alloys

POWER PIPE FABRICATING
Bending, Coiling, Flanging, Threading, Beveling, Lining, etc.

Valves & Fittings
Piling & Fittings
Culverts

SPEED-LAY PIPE SYSTEMS
Write for brochure

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13th St.
Brooklyn 11, N. Y.
Phone EVergreen 7-8100

FOR SALE—*Immediate Delivery*

C. I. Water Pipe A.W.W.A. Standard

BELL & SPIGOT—12 inch, 16 inch, 20 inch, 24 inch and other sizes

FLANGED PIPE—4 inch, 6 inch, 8 inch, 10 inch, 12 inch

C.I. Water Pipe Fittings—B & S, and Flanged—All Kinds and Sizes

SOIL PIPE—EXTRA HEAVY—8 inch, 10 inch, 12 inch, 16 inch

TAGCO, INC.
111 Front Street Hempstead, N. Y.
Tel.—Hempstead 2-5535 or 2-8857

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW-USED

GREENPOINT IRON & PIPE CO., INC.
Bogart and Stagg Streets Brooklyn, N.Y.

If there is anything you want that other readers can supply

OR . . . something you don't want— that other readers can use—

Advertise it in the
SEARCHLIGHT SECTION

Euclid Model BV
LOADER
Cummins HBID Diesel
Rebuilt Condition
$16,000
L. B. SMITH, INC.
Camp Hill, Pa.

For Rent
SPEEDCRANES
LATE MODELS
Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 60 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.
FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd. Long Island City, New York
Tel. STillwell 4-1030

FOR RENT
NEW AND ALMOST NEW
MANITOWOC SPEEDCRANES
2½ Cu. Yd.—60 TON CAPACITY
Clemens Construction Company
P. O. Box 266 West New York, N. J.

PUMPS AT SACRIFICE
Factory new Barnes Centrifugal Pumps
Sizes 3" to 6"
Immediate Delivery
HODGE & HAMMOND INC
720 Garrison Ave. New York 59, N. Y.
Phone: Kilpatrick 2-2400

FOR SALE
1—Model 590 Bucyrus Scraper—Ser. #26062 Excellent Condition—$4500.00
CAMPANELLA & CARDI CONST. CO.
780 Jefferson Blvd. Hillsgrove, R. I.

SURVEYING INSTRUMENTS
USED • REBUILT • SALE • RENT • REPAIRING

FROM STOCK
Brand New & Rebuilt
TRANSITS & LEVELS
Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented
Midwest Representative: W. & L. E. Gurley
NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

GURLEY
SURVEYING INSTRUMENTS
GLASS RETICLES
Replace your platinum wire or spider web reticle with the new Gurley *glass* reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds.
Patterns to suit every surveying need.
W. & L. E. GURLEY
Union Plaza Troy, N. Y.

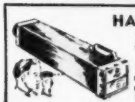
SPECIALIZED REBUILDING
of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.
USED REBUILT INSTRUMENTS
for sale or rent
ROY D. HICKERSON
48 JOHNSON AVE INDIANAPOLIS 19, IND.

REPAIRS
All Makes
TRANSITS • LEVELS
Repaired, Rebuilt,
Rented, Bought, Sold.
All Work Guaranteed
Precision Circular Graduating
BRUNSON INSTRUMENT CO., Inc.
1405 Walnut St., Kansas City 6, Mo.
Manufacturers of survey instruments with the famous patented Brunson Ball Bearing Base.
LASTING BRUNSON ACCURACY

ALL MAKES
REBUILT REPAIR RENT REAL EXPERTS
BUFF
69 Day St., New York

QUALITY REPAIRS
by the makers of the
WORLD'S QUALITY SURVEYING INSTRUMENTS
Since 1871
C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass.

TRANSITS AND LEVELS
New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or *take them in trade.*
A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 01.
WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.


HAND SIGHTING LEVEL
Now Improved, with U.S.A. Waterproof Plastic Case
Ideal for spot checking grades, elevation, etc. $7.85
Easy to use. P.Post 15¢ Extra
J. JACOB SHANNON & CO. 214 N. 22nd St. Phila. 3, Pa.

PROFESSIONAL SERVICES

Duval Engineering & Contracting Co.
General Contractors
FOUNDATION BORINGS
For Engineers and Architects.
Jacksonville, Florida

Consoer, Townsend & Associates
Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Soil Testing Services, Inc.
Theo. W. Van Zelst Carl A. Metz
John P. Gnaedinger
Soil Borings Rock Coring
Engineering Testing of Soils
Soil & Foundation Reports
525 N. Noble Street Chicago 22

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
Statler Building 111 Sutter St.
Boston 16 San Francisco 4

REMEMBER ! !
You can depend on these consultants for a fast, accurate solution to your problems. Consult them when necessary.

Severud-Elstad-Krueger
Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Avenue
New York 17, N. Y.

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Frederick H. Dechant
Consulting Engineer
Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants.
Phila.: Fidelity Phila. Trust Bldg.
New York: 27 William St.

Lawrence A. Leary & Co.
Consulting Engineers
Brickwork & Masonary Constr. Problems
Surveys • Quantity • Safety & Inspection
Mortar Specifications
Box 269, Wayne, Penna.

Inspecting and Testing

The Haller Testing Laboratories, Inc.
Testing and Inspecting of Construction Materials
501 2nd Avenue, New York 17, N. Y.
New York, N. Y. • Boston, Mass.
New Haven, Conn. • Plainfield, N. J.

SNOW MELTING for skid-free surfaces

BYERS WROUGHT IRON

FOR MAINTENANCE-FREE PIPE

To protect motorists against the winter hazards of ice and snow, the Oregon State Highway Commission installed a snow melting system on the eight percent highway grade leading into Klamath Falls, Oregon and made additional news by utilizing hot spring water for the heating medium. The system keeps this four lane, 450 feet long section of the Dallas-California highway skid-free in all weather and rolls out a winter "welcome mat" to heavy traffic.

G. S. Paxson, bridge engineer for the OSHC, developed the unique heating system which takes advantage of hot water from natural springs underlying Klamath. A coil of two-inch pipe, submerged in the hot water at the bottom of a 310 foot well, acts as a heat exchanger to warm a mixture of ordinary water and anti-freeze solution. This mixture, after it is pumped through the well-coil where it is heated to not less than 135 degrees, flows into a network of wrought iron pipe imbedded in the concrete panels. These panels contain 15,000 feet of three-fourth-inch Byers Wrought Iron pipe. A thermostatic pump controls the system which melts up to one-inch of snow or one-tenth-inch of ice per hour. Rogers Construction Company handled the installation of the system.

WHY WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unusual fibrous structure of wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

Tapping nature's "teakettle" is a new twist in snow melting systems, but using Byers Wrought Iron pipe for this service is an old established solution to the corrosion problem. Snow melting systems, utilizing Byers Wrought Iron pipe, are currently serving in sidewalks, loading platforms, garage driveways, service station aprons, and in roadways serving both homes and industrial plants.

Wrought iron is ideally suited for this service because of its combination of essential qualities. Its corrosion resistance has been repeatedly proven over periods of many years in identical service conditions. It is easily formed and welded. Its heat emission is high. It expands and contracts at virtually identical rates with concrete. And it has ample mechanical strength to withstand damage during installation periods.

If you would like additional information, write for our Case Study, No. 4 on Snow Melting Systems.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N.Y.

BYERS

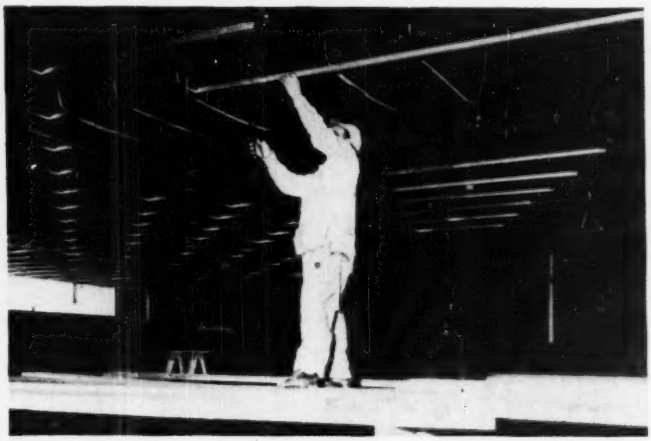
CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

NEW PRODUCTS

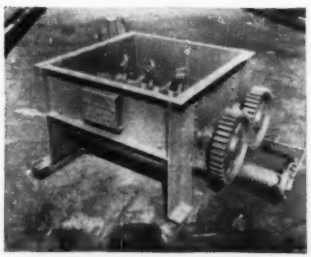


Ceiling boards are suspended from aluminum grid

FIBERGLAS BOARD for suspended ceilings is hung on a grid system fabricated from extruded aluminum T-sections. Used with a suspended ceiling construction (such as Alumi-Coustic), the boards rest on flanges of T-members attached to structural members by hanger wires. The board has a noise reduction coefficient of 80% and sound absorption of 86% at a frequency of 512 cycles. It is rated incombustible under Federal Specification SS-A-118a. The board weighs approximately ½ psf, and will not warp, buckle, or sag, the manufacturer states. Coefficient of heat transmission equals 0.25 btu/in. hr/sq ft at 75 deg. The board can be cut by knife to conform to irregular openings and for ceiling boundaries. It is ¾-in. thick, fabricated to a nominal 23¾ x 47¾-in. size to fit 24 x 48-in. grid spacing.—OWENS-CORNING FIBERGLAS CORP., TOLEDO, OHIO.

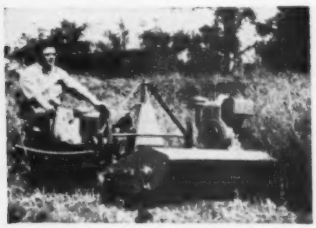
Heavy-duty sweepers

Outstanding feature claimed for the Model 1000 extra-heavy-duty sweeper is an adjustable anti-fatigue seat located at the front to provide unobstructed visibility. Other features include: Special dust control unit; easily emptied hopper; special roller guide that permits sweeping right up to any obstruction; and Light Touch foot pedal that raises the sweeper enabling it to pick up larger objects. Power is provided by an 8-hp air-cooled gasoline engine. Sweeper is equipped with eight dual brushes of Tampico fiber and spring steel wire mix. Sweep widths are 36 or 48 in., extendable to 42 or 54-in. with a curb brush.—WILSHIRE POWER SWEEPER CO., 4615 ALGER ST., LOS ANGELES 26, CALIF.



Twin-shaft asphalt mixer

Improved principle of attaching sectionalized lining in twin-shaft mixer results in easier and more economical replacements. Lining surface, instead of being one solid piece, consists of several smaller sections, bolted to the heavy welded steel body from the outside. No holes or bolts extend through to the wearing surface. Roller bearings are employed to reduce the horsepower required for operation. The machine is available in two models, and is adaptable to all makes of asphalt-mixing plants.—STANDARD STEEL CORP., 5001 BOYLE AVE., LOS ANGELES 58, CALIF.



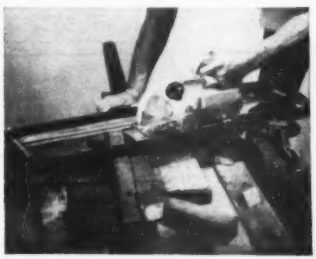
Small high-speed mower

Mott • hammer knife mower mounted on a Mighty Mouse tractor results in a high-speed mower for controlling highway roadsides. One cut through the heaviest of grass or brush, the manufacturer states, will result in a smooth surface of any desired height.

Mower uses hinged knives whirling with centrifugal force from a center shaft to give long cutting life at small up-keep cost. Mower is available in a 4-ft width, and is separately powered by its own 5-hp engine.—MEAD SPECIALTIES CO., DEPT. HKM-45, 4114 N. KNOX AVE., CHICAGO 41, ILL.

Seismographic indicator

Eight-channel oscilloscope, through higher frequency response, is said to provide improved calculations about the characteristics of subsoils. Designated Model H-81, the oscilloscope consists of eight independent channels, each containing a single-gun cathode-ray tube, and eight ac amplifiers. A dc model is also available. Signals are displayed on a horizontal axis for photographing on a film strip or drum with vertical travel. Power supply is independent of the indicator unit.—ELECTRONIC TUBE CORP., 1200 E. MERMAID AVE., PHILA. 18, PA.



Portable saw guide

Crosscutting, mitering, beveling, and ripping are possible with a portable saw when using the Universal saw guide. The guide consists of a

(Continued on next page)

RADIANT HEATING

1. Gives step-by-step methods for designing installations that meet varied requirements . . . tells how to plan and install efficient systems in all types of buildings. Covers boilers, stokers, fittings, thermostats—**all the devices that make up a complete heating system. By Richard W. Shoemaker, Consulting Eng'r. on Radiant Heating and Hydro-Electric Problems. 396 pages, over 200 Illus., $3.50**

FOUNDATIONS OF STRUCTURES

2. Here are sound instructions on every phase of foundation engineering—from how to gather and interpret soil data, and how to plan the support of a structure, to how to handle the construction of that foundation. Describes all types of foundations, **and gives examples of some actual substructures. By Clarence W. Dunham, Professor of Civil Engin., Yale U. 609 pages, 464 Illus., $7.50**

THE EFFECTS OF ATOMIC WEAPONS

3. A timely survey presenting the results to be expected from the detonation of atomic weapons. The book gives you an understanding of the effects of this enormous energy release when used as a weapon of war, as a basis for the development and administration of protective measures for personnel and property. **U. S. Atomic Energy Commission and U. S. Department of Defense. 456 pages, 100 Illus., $3.00**

CONSTRUCTION ESTIMATES AND COSTS

4. Gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel, materials transportation, profit, overhead, etc. A working guide for beginner—**a key to safer bids, better profits for all estimators. By H. E. Pulver, Professor of Civil and Structural Engin., U. of Wisconsin. 2nd Edition. 653 pages, 287 Illus., $7.00**

McGRAW-HILL

SEE THESE BOOKS 10 DAYS FREE

McGraw-Hill Book Co., Inc.
330 W. 42nd St.
New York 18, N. Y.

Send me book(s) corresponding to numbers encircled below for 10 days' examination on approval. In 10 days, I will remit for book(s) I keep, plus few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)

1 2 3 4

Name .....
Address .....
City ..... Zone ... State .....
Company .....
Position NR-1-4-51

This offer applies to U. S. only

rigid clamping device for attachment to the front member of a miter box and a quickly adjustable locking quadrant to which are attached either crosscutting or ripping cradles. These cradles have adjustable sidebars to accommodate the shoe of any standard saw from 6 to 12-in. size. They can be quickly changed to permit the use of more than one type of saw on a single job. Saw can be inverted to form a table saw complete with guide fence. — UNIVERSAL SAW GUIDE, 1080 AC HOWARD ST., SAN FRANCISCO, CALIF.

Stapling hammer

High-speed tacking and light nailing jobs are simplified with the H2B stapling hammer. Over twenty improvements in design and construction are said to have been incorporated in this new model. The H2B uses staples of 0.050x0.019 wire, available in several leg lengths. The hammer is one-hand operated.—BOSTITCH, 315 MECHANIC ST., WESTERLY, R. I.

Automatic-rewind tape

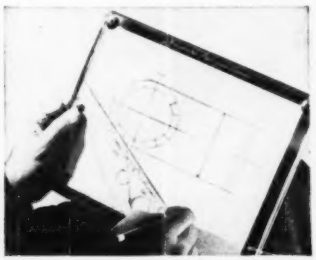
Steel-tape rule rewinds automatically. It features easy interchangeability of rule blades permitting the alternate use of tapes divided in eighths or tenths, or the replacement of damaged tapes. The Longboy has a negator-type spring in its planetary coiling mechanism. The tape is ¾-in. wide and is made of nickel-plated high-carbon spring steel. Presently available in 50 and 100-ft models.—MASTER RULE MFG. CO., INC., MIDDLETOWN, N. Y.

Two-cylinder 30-hp diesel

Type 4FS2 two-cylinder diesel is rated 20 to 30 hp within an operating-speed range of 1,200 to 1,800 rpm. It features low operating cost and heavy-duty construction, and is a self-contained ready-to-operate unit. Electric or manual starting is available. Engine speed is controlled by adjustment of the governor.—NORDBERG MFG. CO., CHICAGO & OKLAHOMA AVES., MILWAUKEE 7, WIS.

Office copying machine

Entirely self-contained copying machine requires no inks, tray developing, dark rooms, subdued or special lighting. The BW Copyflex employs the diazo process and accomplishes the entire copying process within itself, with no need for plumbing or exhaust fans. Handles any copy up to 11¼-in. wide.—CHARLES BRUNING CO., INC., 100 READE ST., NEW YORK 13, N. Y.



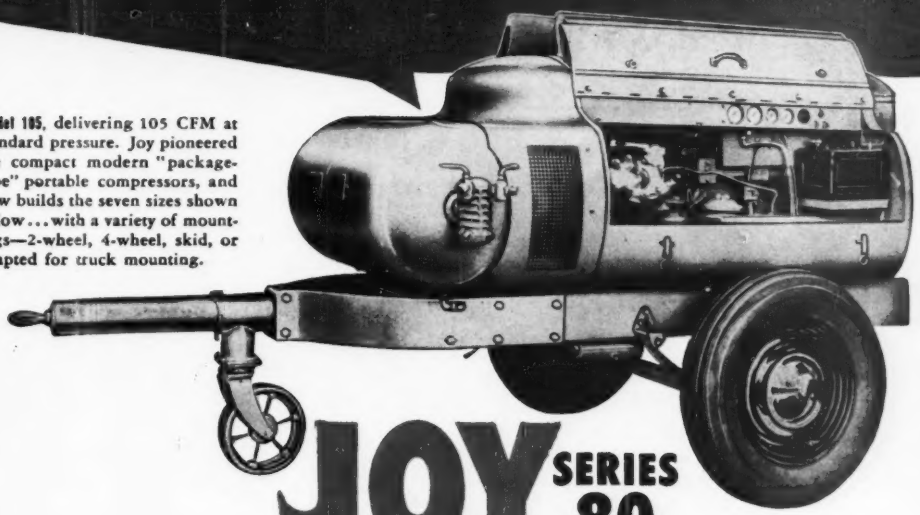
Portable drawing board

Styrene board weighs less than 8 oz and fits easily into a briefcase. Corner clamps for attaching 8½x11-in. paper are recessed into the plastic to provide an undisturbed surface. Two retractable metal straight edges eliminate need for a T-square. Triangles are held in place on the underside by tension clamps.—A. PARTRICK CO., 9 GROVE ST., WESTWOOD, N. J.

(*Continued on page 105*)

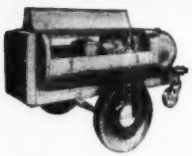
Portable

Here's AIR POWER at Lowest Cost and Topmost Efficiency

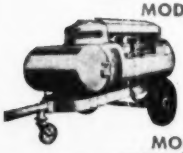


Model 185, delivering 105 CFM at standard pressure. Joy pioneered the compact modern "package-type" portable compressors, and now builds the seven sizes shown below... with a variety of mountings—2-wheel, 4-wheel, skid, or adapted for truck mounting.

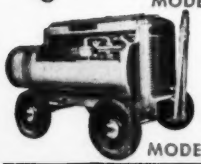
JOY SERIES 80 PORTABLE COMPRESSORS



MODEL 60



MODEL 160



MODEL 210

Compare these Features!

- ★ 2 STAGE COMPRESSION
- ★ AUTOMATIC "ECONO-MISER" LOAD CONTROL
- ★ SEVEN SIZES—60 TO 630 CFM
- ★ NOTHING TO MATCH THEM FOR MODERN, COMPACT DESIGN—PORTABILITY—RELIABLE AND EFFICIENT OPERATION

WRITE FOR BULLETINS!

MODEL 315

MODEL 500

MODEL 630

WAD C-5074

Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

For longer life

USE QUAKER STATE SUPERFINE LUBRICANTS

COMPLETE PROTECTION against wear is a tough assignment for any gear lubricant. Quaker State Stabilized Quadrolube is especially made for transmissions and rear axles (except Hypoids)*. It embodies all the unparalleled qualities of 100% pure Pennsylvania base oil. Exceptionally resistant to pressure and heat, it also resists cold, moisture, rust, corrosion and foaming.

To give your equipment longer life and keep it rolling at its best, give it complete Quaker State Lubrication service. **For Hypoids, use Quaker State Super Quadrolube.*

A COMPLETE LINE OF FINEST QUALITY LUBRICANTS

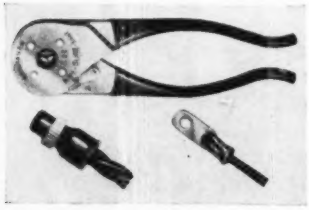
- Quaker State Super Quadrolube
- Quaker State Viscous Lubricant
- Quaker State Wheel Bearing Lubricant
- Quaker State EXPP2 Lubricant
- Quaker State Universal Joint Lubricant
- Quaker State Quadrolube

Portable heater

Self-contained portable heater employs a special concentrated fuel in a 20-lb pressure cylinder. According to the manufacturer, it will raise the temperature of a normal-size room from 30 to 80 deg within 20 min. Fuel is easily ignited, and no pumping of the pressure cylinder is needed. Total weight is 55 lb.—The Portable Heater Co., 814 Engineers Bldg., Cleveland 14, Ohio.

Improved concrete cutter

Higher powered engine (13.5 instead of 10 hp) on Di-Met concrete cutter is said to insure maximum diamond wheel life, even on rugged concrete-cutting operations. Variations in wheel speed, regardless of load and depth of cut, are said to be virtually eliminated. A hose connection permits positive water feed to the blade from external sources. The 15-gal. tank for gravity feed remains. Standard equipment and blade permit cutting to a 6½-in. depth. Pneumatic rear tires expedite transportation to and from the job. Removable tongue attaches to standard trailer hitch on car or truck.—Felker Mfg. Co., 1128 Border St., Torrance, Calif.



Wire connectors

Splice caps used with specially designed tool speeds pigtail splicing of electrical wires. The open-end splice caps are said to insure that wire insulation is flush with splice cap and that wires are always inserted to full depth. Two sizes of caps fill all requirements for wires from two #18 to three #8. Quickly applied snap-on insulators eliminate necessity for taping of joints. The pre-SURE tool installs both sizes of splice caps and also Termend lugs. Crimping action of the tool provides maximum electrical and mechanical efficiency on both solid or stranded

(*Continued on next page*)

POWER *plus* PORTABILITY

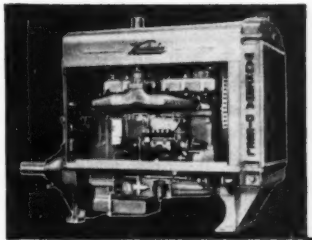
WAUKESHA *Diesel* POWER

● **Quickly moved, and easily set up, to turn out a smooth uninterrupted flow of ¾-inch aggregate — 100-125 cu. yds. an hour! This portable crushing, screening, loading plant is built by Highway Machinery Co., Waukesha, Wis. Its design emphasizes portability *and* power—Waukesha *Diesel* Power for capacity, dependability and low-cost operation.**

This plant has a special 10½″ x 36″ Dual Jaw Primary Crusher, with Roll Secondary Crusher, 4′ x 8′ Triple Deck Screen, feeder, drum elevator, and conveyors—and all equipment is powered by the Model 148-DKU Waukesha Diesel. Yet it handles every load demand eagerly and easily with power to spare... burning its fuel cleanly, without smoking on the job. Economical, too ...and easy to start. And neither flying dust nor dirt deter it in the least. Easy to understand and operate, this Waukesha Diesel is a contractor's engine.

Send for Bulletin 1414.

108

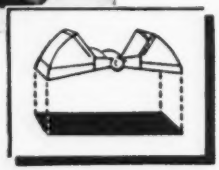


Model 148-DKU WAUKESHA DIESEL — Six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement, 180 hp. maximum.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK ▪ TULSA ▪ LOS ANGELES

ERIE *Barge Type* Bucket

In this type the large deck area achieved means bigger payloads in stock piling and barge rehandling work. Erie's booklet on 2-line buckets gives you complete data on this type and 3 other classes of Erie Buckets. Write for copy today.



Compare DECK AREA

¾ Yd.	27.21 Sq. ft.
1 Yd.	30. Sq. ft.
1¼ Yd.	32.3 Sq. ft.
1½ Yd.	38.7 Sq. ft.
1¾ Yd.	42.4 Sq. ft.
2 Yd.	45.1 Sq. ft.
2¼ Yd.	53.5 Sq. ft.
2½ Yd.	57.6 Sq. ft.
3 Yd.	60.9 Sq. ft.

Write for Catalog 2L-1 *Today*

ERIE

STEEL CONSTRUCTION COMPANY

1001 GEIST ROAD • ERIE, PENNSYLVANIA

GUNITE

PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH

for

Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

SISALKRAFT
WATERPROOF SISAL-REINFORCED PROTECTIVE PAPERS

PROVIDE
COLD-WEATHER PROTECTION for
MEN, MATERIALS and EQUIPMENT

Rugged SISALKRAFT, easy to handle, is the most economical protective cover you can use for closing-in open structures and for covering materials and equipment. Also for curing concrete.

WRITE FOR FREE SAMPLES and PRACTICAL DATA

THE SISALKRAFT CO.
Dept. EN1, 205 W. Wacker Dr., Chicago 6, Ill.
New York 17, N. Y. • San Francisco 5, Calif.

Stang WELLPOINT SYSTEM

For
KNOW-HOW
•
ENGINEERING
•
SUPERVISION
•
EQUIPMENT
•
to keep jobs
DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W STANG CORPORATION
2 Broadway, New York 4, N. Y. — 2123 S. 36th St., Omaha, Nebr. — 8221 Atlantic Ave., P. O. Box 631, Bell, Cal.

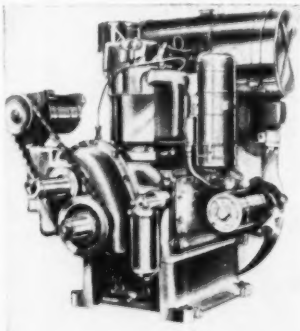
wires, or any combination of the two. —BUCHANAN ELECTRICAL PRODUCTS CORP., 1290 CENTRAL AVE., HILLSIDE, N. J.

Chevrolet trucks for '51

Gross vehicle weights of the 1951 Chevrolet trucks range from 4,000 to 16,000 lb. They are available in 10 wheelbases, including the new 179-in. chassis, in a wide variety of sizes and design. A special feature of the '51 line is the redesigned brakes. They are hydraulic and self-energizing, and have linings bonded to the shoes, eliminating rivets. Heavy-duty trucks have Twin-Action rear brakes. Cabs have been redesigned for increased operator safety and comfort.—CHEVROLET MOTOR DIV., GENERAL MOTORS BLDG., DETROIT 2, MICH.

Lightweight 6-inch saw

High speed and dependability are features of the W65 electric safety saw. Round arbor allows the use of any standard blade. Saw bevels at any angle up to 45 deg to a 1¼-in. depth. Saw cuts to 2-in. depth at 90 deg. It is powered by a universal 5,600-rpm ac/dc motor.—STANLEY ELECTRIC TOOLS, NEW BRITAIN, CONN.



Air-cooled diesel engines

British-made Armstrong-Siddeley air-cooled diesel engines are available in two sizes—a single-cylinder 8-hp model, and a two-cylinder 20-hp model. These diesels are particularly well suited, the manufacturer claims, to generator service developing from 3 to 10 kw. Both models may be furnished with standard SAE bell housing mounted on the flywheel

(*Continued on page 109*)

Whether your daily water consumption demands be 3,000,000 gallons or hundreds of times that figure, Lock Joint Pipe Company is prepared to provide a supply line for your requirements.

In the last few years the Company has supplied not only hundreds of miles of large diameter pipe but also more than a million feet of 16" to 24" pipe for municipalities and industry. This has been made possible through the establishment of three permanent manufacturing plants. Lock Joint Concrete Pressure Pipe from 16" to 42" in diameter, produced at these plants, can be shipped economically to all parts of the country —for both major installations and minor extensions.

Our representative will be glad to discuss with you any water supply or transmission project which calls for pressure pipe 16" in diameter or larger. You will find that Lock Joint Concrete Pressure Pipe's superior characteristics of long life, continuous high flow and negligible upkeep will recommend it above all others for any permanent water supply installation.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

Civil and mechanical engineers alike, are discovering the advantages of applied Lukenomics in economically licking problems involving corrosion, erosion, pressures, thermal variation. Typical of such projects are the 835-ft. penstock lines of Shasta Dam. These lines have sliding expansion joints with inner sleeves of Lukens Nickel-Clad Steel. Built for the U. S. Bureau of Reclamation, these sturdy lines have provided over six years of safe, trouble-free service with no corrosion "freeze-ups"—no buckling of lines regardless of weather—and a minimum of maintenance.

. . . whatever your engineering problem, the going's tough . . . particularly if you need equipment made of hard-to-get metals.

That's where progressive equipment builders can help. They can recondition present equipment for greater production. If you're buying new equipment, they can build it better, and make more effective use of scarce materials—often saving you money and conserving critical metals.

To assure the greatest user benefit, such equipment builders apply the *Lukenomics* principle. For Lukenomics combines their experience and that of designers and engineers with Lukens' specialized knowledge of materials and their application. We'll gladly put you in touch with equipment builders applying this principle. Just write—Manager of Marketing Service, Lukens Steel Company, 513 Lukens Building, Coatesville, Pa.

With the defense program having first call, you'll understand why Lukens specialty steel products for civilian use are not so plentiful as in normal times.

LUKENS

LUKENS STEEL COMPANY

OVER 140 YEARS' EXPERIENCE AS THE WORLD'S LEADING PRODUCER OF SPECIALTY STEEL PRODUCTS

STEEL PLATE | CLAD STEELS | HEADS | STEEL PLATE SHAPES

cowl. Flywheel driving member and adapter ring accept a standard No. 4 SAE clutch. Other recommended uses include powering pumps, crushers, compressors, and mixers. Electric starters are available, although both models afford cold starting by hand. —LISTER-BLACKSTONE, INC., 420 LEXINGTON AVE., NEW YORK 17, N. Y.

Thread Restorer

Tool is suited especially for reconditioning closely spaced studs and bolts that are battered, distorted, or rusted. Swing on the new Buckingham thread restorer is 2⅞ in. Adjustable cutting jaws are fitted by a twist of the handle to any male thread of ¼ to 1-in. root diameter. No die sets are required for interchange for size or type of thread. —BUCKINGHAM MFG. CO., INC., BINGHAMTON, N. Y.

New Product Briefs

"Cold rubber" used in some of the B. F. Goodrich Co.'s conveyor and elevator belts is said to provide higher resistance to abrasion in certain flat-belt services.

Danger striping (yellow and black diagonal stripes) for marking trucks carrying explosives or inflammables, can be applied as decalcomanias. The decal striping comes in 30x48-in. sheets. Made by: Meyercord Co., Chicago 44, Ill.

Neoprene-coated canvas gloves are said to be especially useful in handling wet articles. Made by: The Pioneer Rubber Co., Willard, Ohio.

Reconditioning gage indicates when to grind and the proper angle to grind a dull tungsten-carbide rock bit. Available from: Rock Bit Sales & Service Co., Philadelphia 25, Pa.

1 of 10 Reasons Why UNIT is a Better Machine

UNIT was the first manufacturer to "break" from the old style, conventional type cab in favor of the more modern Full Vision Cab. There is no other cab like it—streamlined to the minute in design, without sacrificing headroom, weight, or capacity. It offers unexcelled visibility, with all the room needed to operate in real comfort and safety. Large, shatterproof safety-glass windows, on all four sides, provide more light and give full protection against inclement weather. Windows on both sides can be raised or lowered by crank action—the double front window folds and slides up out-of-the-way. Convenient sliding side panels, and easily lifted top hood covers give ready accessibility to main machinery, engine parts and assemblies. Broad platform walks, on both sides, make it especially easy to service at any point. The UNIT Full Vision Cab has superior design that outdates all others—constructed to assure efficient and safe operation.

UNIT CRANE & SHOVEL CORPORATION
6315 W. Burnham Street, Milwaukee 14, Wisconsin, U. S. A.

357 MOBILE CRANE
Self-propelled . . . Powered by ONE engine . . . controlled and operated by ONE man . . . the smoothest operating and easiest handling crane made . . . Compact, it has light-truck mobility . . . operates with speed and economy . . . on or off the highway.

This is the 2nd of a series of ten ads describing outstanding UNIT features.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

UNIT

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 5851-½I-C

"GUNITE" CONCRETE (Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

S. T. Burton Co., 228 N. LaSalle St., Chicago 1, Ill.
George R. Lewis Co., 1200 Baker Bldg., Minneapolis 2, Minn.
B. H. Mueller Co., 6625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING for Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

More than 5,000,000

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

The performance record of more than five million Briggs & Stratton single-cylinder, 4-cycle, air-cooled engines speaks for itself.

BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U.S.A.

"Preferred Power"
for home, farm and industrial equipment — powered by gasoline engines.
the world's most widely used single-cylinder gasoline engines
World Wide
FACTORY SUPERVISED SERVICE

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

Manufacturers' Publications

Long-reach crane, dragline—Manitowoc Model 3900 long-reach crane and dragline is described in a 12-p catalog. The machine is rated as a 3-yd dragline, with lift capacities of 60 tons at 12-ft radius and 30 tons at 30-ft radius. The bulletin lists complete working ranges and capacity tables. Pictures and test data illustrate features and machinery details. Gear diagrams and photos show optional equipment available for special jobs.—Manitowoc Engineering Works, Manitowoc, Wis.

Fluorescent fixtures—Data sheet describes the 425 MA, T-12 line of slimline-lamp fluorescent fixtures. Offered in six basic models, the line contains a total of 20 structural and dimensional variations. Photographs and specifications are included on sheet D-5010.—Colonial Electric Products, Inc., 1-115 Market St., East Paterson, N. J.

Universal joints—Information in Catalog C1 includes: How to select universal joints; graphs covering data on tests, efficiency, and heat loss; assembly instructions; engineering data covering weights, specifications, and dimensions; and complete buying and ordering instructions.—Curtis Universal Joint Co., Inc., Springfield 7, Mass.

Welding manual—Technical handbook (44 pp) covers latest developments in welding materials and techniques. "The Manual of Welding Engineering and Design" contains data on characteristics, properties, and applications and operational procedures for Eutectic alloys and fluxes. Information is also presented in compact, handy form on all phases of welding.—Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y.

Locknuts—Various types of locknuts, and their principles of operation, are listed in a 16-p catalog. This catalog discusses the history of locknuts, illustrates early methods devised for locking a nut on a bolt, and explains the reasons for the locknut in modern equipment. The final section is devoted to listing the products of several manufacturers. Each locknut is illustrated, accompanied by text describing it; listing its particular principle of operation; and listing the manufacturer's name and address.—Industrial Fasteners Institute, Locknut Section, 3648 Euclid Ave., Cleveland, Ohio.

ADVERTISERS IN THIS ISSUE

Aeroquip Corp. 53
American Pipe & Construction Co. 11
Armco Drainage & Metal Prdts, Inc. 2nd Cov.
Atlas Powder Co. 5
Austin-Western Co. 56, 57

Belmont Iron Works 79
Bethlehem Steel Co. 71
Briggs & Stratton Corp. 110
Broderick & Bascom Rope Co. 54
Bruning Co., Inc., Charles 51
Butler Bin Co. 68
Byers Co., A. M. 100

Cement Gun Co. 70
Chain Belt Co. 59
Cole Mfg. Co., R. D. 86
Complete Machinery & Equipment Co. 2
Concrete Reinforcing Steel Institute 12

Dewey & Almy Chemical Co. 73

Eimco Corp., The 77
Erie Steel Construction Co. 106

Goodrich Co., The, B. F. 1
Great Lakes Steel Corp.-Stran-Steel Div. 60
Greenlee Tool Co. 58
Gunite Concrete & Construction Co. 109
Gunite Construction Co. 106

Harnischfeger Corp. 63
Hayward Co. 70

Ingersoll Rand Co. 8
International Harvester Co. 14, 15
Irving Subway Grating Co. 70
Irvington Form & Tank Corp. 111

Jaeger Machine Co. 55
Jeffrey Mfg. Co. 10
Jenkins Bros. 4
Joy Mfg. Co. 103

Koppers Co. 66

Laclede Steel Co. 69
Layne & Bowler, Inc. 62
Lefax Co. 70
Lima Shovel & Crane Div., Hamilton Corp. 42
Lock Joint Pipe Co. 107
Lone Star Cement Corp. 18
Lukens Steel Co. 108
Lull Mfg. Co. 67

McGraw-Hill Book Co. 102
McKiernan-Terry Co. 13
Michigan Power Shovel Co. ..... 3rd Cov.
Mott Core Drilling Co. 109

Northwest Engineering Co. 3

Ohio Locomotive Crane Co. 81
Onan & Sons, Inc., D. W. 48

Pennsylvania Drilling Co. 79
Pioneer Engineering Works 9
Pittsburgh-Des Moines Steel Co. 81
Portland Cement Assn. 74
Pressure Concrete Co. 69

Quaker State Oil Refining Corp. 104

Raymond Concrete Pile Corp. 16
Rockwell Mfg. Co. 49
Rodgers Hydraulic, Inc. 72
Rogers Bros. Corp. 64

Sauerman Bros., Inc. 79
Seaman Motors 82
Sisalkraft Co. 106
Smith Corp., A. O. 52
S K F Industries, Inc. 38
Solvay Sales Div., Allied Chemical & Dye Corp. 76
Spencer, White & Prentis, Inc. 81
Sprague & Henwood, Inc. 81
Stang Corp., John W. 106
Stone & Webster Engineering Corp. 45

Texas Co. 6, 7
Timken Roller Bearing Co. ..... 4th Cov.
Tinney Drilling Co. 111
Trailer Village, Inc. 111

Underpinning & Foundation Co. 86
Unit Crane & Shovel Corp. 109
U. S. Steel Subsidiaries 22
Universal Atlas Cement Co. 22
Universal Form Clamp Co. 20

Vacuum Concrete, Inc. 79
Victaulic Co. of America 65
Vulcan Iron Works 80

Waukesha Motor Co. 105
White Co., David 61
Williams Co., J. H. 69
Winslow Scale Co. 86
Worthington Pump & Mchry. Co. 50

Professional Services **99**

SEARCHLIGHT SECTION
(Classified Advertising)

Employment
Positions Vacant 91
Selling Opportunities Offered 91
Part Time Work 91, 92
Employment Services 91

Special Services
Contract Work 92

Educational
Schools 92
Tutoring 92

Business Opportunities
Offered 92

Notices
Proposal 88-90

Property
Wanted 92

Equipment
(Used or Surplus New)
For Rent 99
For Sale 93-99
Piling 98
Pipe 98
Rail 94
Surveying Instruments 99

Wanted
Equipment 92, 96
Miscellaneous 92

ADVERTISERS INDEX **90**

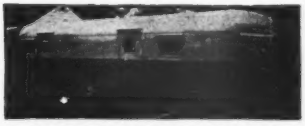
What's become of all the WOOD FORMS you bought?

ATLAS SPEED FORMS

can be — and have been — used and re-used as many as 500 times. That's ½ cent per sq. ft. per use! Each time as quick, easy and economical to use as the first.

IRVINGTON FORM & TANK CORP.
Irvington 18, N. Y.

Send more information. I am interested in forms for.....
Name.....
Firm.....
Address.....



CONTRACTORS' FIELD OFFICE TRAILER
Designed by Road Contractor
28' Aluminum Body—8' Wide
3 Rooms—2 Built-in Desks
1 Drafting Table—Built-in Letter Files—Cabinets—Closets—Drawers—etc.
Price $2695.00 f.o.b. Baltimore

TRAILER VILLAGE, INC.
8645 Pulaski Highway, Baltimore 21, Md.
Phone: Essex 2233

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

Letter from INDIANAPOLIS

Indianapolis—which only this year lost its title (to Dallas) as the world's largest inland city—is beginning to find itself the victim of encirclement by land.

An ever-tightening ring of suburban communities that the city can't or won't swallow (or that don't want to be swallowed) poses one of the major headaches both for city officials and for planners.

That's the key problem. There are many others, of course: An adequate sewer system; a public transit system that's operating in the red; poor street pavements that aggravate the traffic tangle are others.

• **Depends on legislature**—Indianapolis residents are prone to blame many of their troubles on a rural-district-dominated state legislature (the parallel to New York City is startling).

They feel the legislature must do a number of things if Indianapolis is to continue as an efficient organism.

One of these would be to unsnarl the existing town incorporation laws. The communities sprouting around the perimeter of the city now incorporate to escape high tax rates of the city—yet receive all the services offered to city residents.

Other things that depend on legislative action—and Indianapolis is going to fight for them—include a more equitable distribution of gasoline taxes; new laws to untangle a legalistic block on sewer system expansion plans.

• **Like Topsy—almost**—But it's the somewhat cancerous growth of the satellite communities that seems to make city residents maddest.

Conflicting interpretations of state incorporation laws are the basis. One example concerns Homecroft, a residential colony incorporated in 1949, just south of the city's University Heights section.

According to a five-year-old state law (designed to prevent what's happening), such communities may incorporate if they first receive approval from the city and county plan commissions. Homecroft did just that—but withdrew its application for city consideration, after receiving a go-ahead from the county. The then county attorney said Homecroft's action was legal, and he cited a 1947 law that repealed provisions of the 1945 statute regarding need for city approval.

The city's legal staff disagreed, but there was nothing to do except force a test case in the courts. No test was made.

There's another factor, of course. The city isn't particularly eager to acquire added territory, on the theory that a lot of it wouldn't produce enough tax return to pay for the added services that would have to be provided.

But in the meantime, in the words of one engineer, "the outside communities form a lopsided, cancerous growth outside the body of the city, yet must be provided with some services—water, transit and the like."

• **Remedy**—Now, civic leaders are mapping legislation to combine city, county and township functions into metropolitan districts, to set up a blanket program for development of heavily populated areas.

The first step in this direction is a proposal to merge functions of city and county health departments—which would mean, in part, that county residents would have to participate, tax-wise, for new hospitals and clinics in larger communities.

• **Sewer problems**—Although the city's (and the state's) troubles with sewer financing are at the moment in the hands of the State Supreme Court, the eventual solution, say Indianapolis leaders, also goes back to the state legislature.

At the moment, the Supreme Court has under study the question of the authority of sanitary districts to issue bonds based on city assessed valuations. The study was precipitated by rulings of a lower court at Hammond, which held that a sanitary district there was not a separate municipality and therefore did not have direct bonding power (ENR July 20, p. 27).

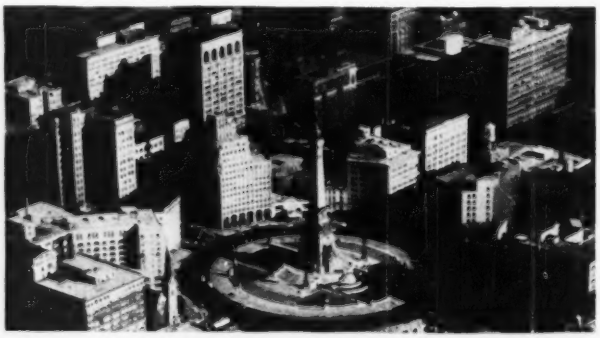
The court won't decide who can bond what at least until the new legislature convenes. Meanwhile, major sewer projects in Indianapolis and several other cities—totalling over $30,000,000—are blocked.

As a remedy, the local chamber of commerce is sparking a drive for new legislation that would provide new revenue-raising methods.

If the new laws go through, the legislature would authorize a revenue bonding set up for cities of first and second class, so that the cities could sell bonds and retire them by producing revenue from a sewer service charge. Such charges could be based on the amount of water used, or on the number of taps in a house, or on the size of the rooms or the amount of use of sewers, or on other bases.

• **That's not all**—With plant expansions already on the books, and new industries coming to town (Western Electric, Chrysler Corp., among many) civic leaders see a continuing demand for more homes, more schools, better public transit, sewers and other services.

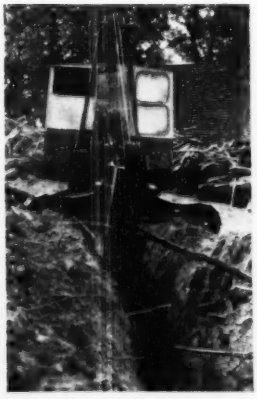
With a city population of over 475,000, and rapidly-growing suburbs at more than 50,000, homebuilders are complaining that they can't find good building sites within city limits now. They can't get good streets, transit or sewerage outside, but they're going there anyhow—drawn by lower taxes and more room.



LOCKED IN by surburbs, Indianapolis, capital of the Hoosiers, last year lost to Dallas its dominance as the nation's largest inland city. Civic leaders are impatient for more homes, schools, public transit, sewers and other city services. Central landmark is the Civil War Monument.

Trouble-Free PERFORMANCE

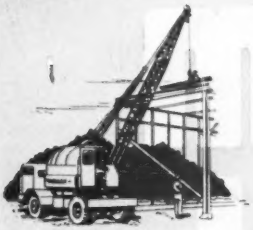
"It's the only machine we've had for any length of time that has had no major repairs." That's what William Wylie, equipment foreman, says about the MICHIGAN ½ yd. Crawler Excavator owned by A. G. Woods Company, Windsor, Connecticut. Yes . . . it's quite a record for an excavator that has been *"worked hard," 10 to 14 hours a day for a year and a half.*



At Woody Crest Housing Development in West Hartford, Connecticut, the MICHIGAN digs service, sewer, water and drainage ditches . . . excavates for septic tanks and basements . . . loads trucks. Digging 450 feet of trench and laying the eight inch pipe is an average day's work.

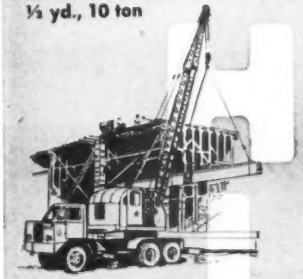
Service records like this are typical for MICHIGAN Excavator-Cranes. Why settle for less? When you need an excavator-crane . . . investigate MICHIGAN . . . you'll agree it's *your best buy!* Write, wire or phone for complete details.

MICHIGAN POWER SHOVEL COMPANY
500 Second Street, Benton Harbor, Michigan, U. S. A.



Model T6K
⅜ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

How TIMKEN® bearings buck up a bucket

THIS clamshell—one of the largest ever built by Blaw-Knox—has a capacity of 17 tons. It is used to transfer coal from barges to storage piles or hoppers.

To carry this tremendous load with a minimum of wear on moving parts, the sheaves are mounted on Timken® tapered roller bearings. Timken bearings let sheaves turn easily under the heaviest loads, preventing excessive wear on cables and sheaves. They save lubrication and maintenance time.

Due to the line contact between rollers and races, Timken bearings have extra load capacity. True rolling motion and smooth surface finish practically eliminate friction. Where there are combinations of radial and thrust loads, Timken bearings take them both. And because Timken bearings are engineered for the job, made of tough, wear-resistant Timken alloy steel, and precision-manufactured, they normally last the life of the equipment in which they are used.

For over half a century, the dependable performance of Timken bearings has made Timken-equipped products first choice throughout industry. When you specify bearings, specify Timken bearings. And when you buy new equipment, look for the trademark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

BLAW-KNOX *mounts sheaves of giant clamshell on Timken tapered roller bearings. Typical sheave mounting is shown here.*

DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roll ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

® TRADE-MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL ⊕ AND THRUST → LOADS OR ANY COMBINATION